HITACHI

SERVICE MANUAL

YK	No. 0043E

CM751

C98 Chassis

(V1.1)

CAUTION **Before servicing this chassis, it is important that the service personnel must read the "Safety Precautions" and "Product Safety Notice" in this Service Manual.**

CONTENTS

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT.

HIGH RESOLUTION COLOR DISPLAY MONITOR

(APRIL 1997)

FEATURES

1 Flat screen CRT with anti-glare, dynamic focus circuit,dark glass, and INVAR shadow mask give the sharpest focus and highest contrast.
2. Automatic scanning and automatic adjustment to conform with a wide range of scanning frequencies and user requirements.
3. Signal input allows D-Sub Min 15pin cable.
4. Power Save Mode automatically puts the monitor into a standby mode (power consumption less than 30W) when the H.sync. signal is not detected, and a power - off mode(less than 5W) when the V.sync, signal is not detected. Normal mode is restored immediately when the H. sync. signal and the V.sync signal are detected. This feature prolongs monitor life and reduces energy consumption by up to about 75 %.

SAFETY PRECAUTIONS

NOTICE: Comply with all cations and safety related notes located on or inside the cabinet and on the chassis or picture tube.

The following precautions must be observed.

1 Do not install, remove, or handle the picture tube in any manner unless shatterproof goggles are worn. People not so equipped should be kept away while picture tubes are handled.
2. When replacing a chassis in the monitor, all the protective devices must be put back in place, such as, barriers, non-metallic knobs, adjustment and compartment shields, and isolation resistor-capacitor, etc.
3. When service is required, observe the original lead dress. Extra precaution should be taken to assure correct lead dress in the high voltage circuitry area.
4 Always use the manufacturer's replacement components. Especially critical components as indicated on the circuit diagram should not be replaced by other manufacturer's. Furthermore where a short circuit has occurred, replace those components that indicate evidence of overheating.
5. Before returning a serviced monitor to the customer, the service personnel must throughly test unit to be certain that it is completely safe to operate without danger of electrical shock, and be sure that no protective device built into the monitor by the manufacturer has become defective, or inadvertently defeated during servicing.
   Therefore, the following checks should be performed for continued protection of the customer and service technician.
6. In the case of the micro prossesor unit, shop adjustment is necessary after exchange of the micro prossesor unit.

High Voltage

This monitor is provided with a high voltage hold down circuit for clearly indicating that voltage has increased in excess of a predetermined value.
Comply with notes described in this Service Manual regarding this hold down circuit when servicing, so that this hold down circuit may function correctly.

Service Warning

With minimum Brightness and Contrast the operating high voltage in this display is lower than 30 kV.
If any component having influence on the high voltage is replaced, confirm that the high voltage with minimum Brightness and Contrast is lower than 30 kV.
To measure high voltage use a high impedance highvaltage meter. (SENSITIVE RESEARCH Model: ESH or Equivalent)
Connect (−) to chassis earth and (+) to the CDT anode button. (See the following connection diagram Fig. 1.)

NOTE: Turn power switch off without fail before making the connection to the Anode button

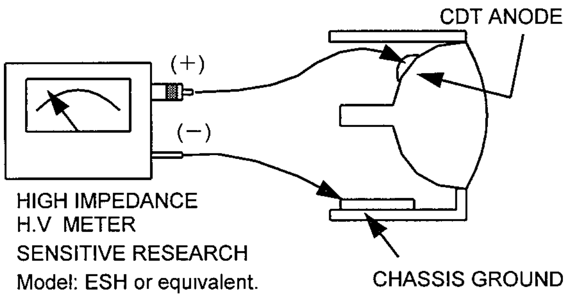


Fig. 1

X-radiation

TUBE: The source of X-radiation in this monitor is the picture tube. The tube utilized in this chassis is specially constructed to limit X-radiation emissions.
For continued X-radiation protection, the replacement tube must be the same type as the original, manufacturer approved type.
When troubleshooting and making test measurements in a monitor with a problem of excessive high voltage, avoid being unnecessarily close to the picture tube and the high voltage components.
Do not operate the chassis longer than is necessary to locate the cause of excessive voltage.

CHECK OF HIGH VOLTAGE HOLD DOWN CIRCUIT

Checking of the high Voltage hold down circuit operation.

1 Turn the switch of the unit ON, and set the Brightness and Contrast controls to max.
2. Turn the switch of the unit OFF
3. Connect a DC Voltmeter and an adjustment jig as shown in Fig. 2.
4. Set the adjustment VR to fully counterclockwise.
5. Turn the switch of the unit ON and gradually rotate the adjustment VR clockwise.
6. Check that a reading of DC voltage-meter is less-than 0.6±0.1 V when picture disappears.
7 Turn the switch of the unit OFF immediately after checking that the picture disappears.
8. Remove the adjusting jig and the DC voltmeter.

NOTE: Reading of 0.6 V is approximately equivalent to 30 kV of CDT Anode High Voltage.

PRODUCT SAFETY NOTICE

Many electrical mechanical parts in the color monitor units have special safety related characteristics.
These are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.
Electrical components having such features are identified by markin with ⚠ on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which does not have the same safety characteristics as the manufacturer recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, X-radiation, or other hazards.
Productions are issued from time to time. For the latest information, always consult this Service Manual.

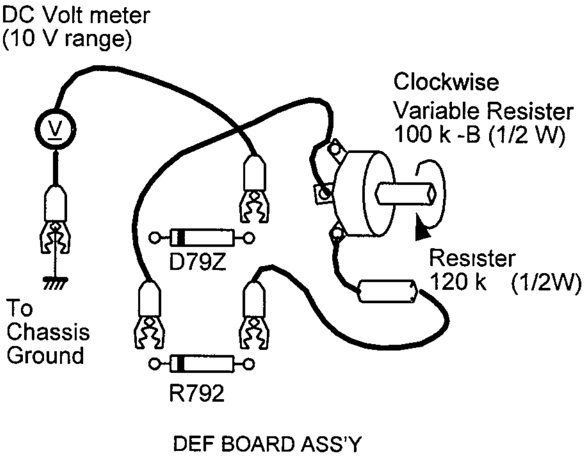
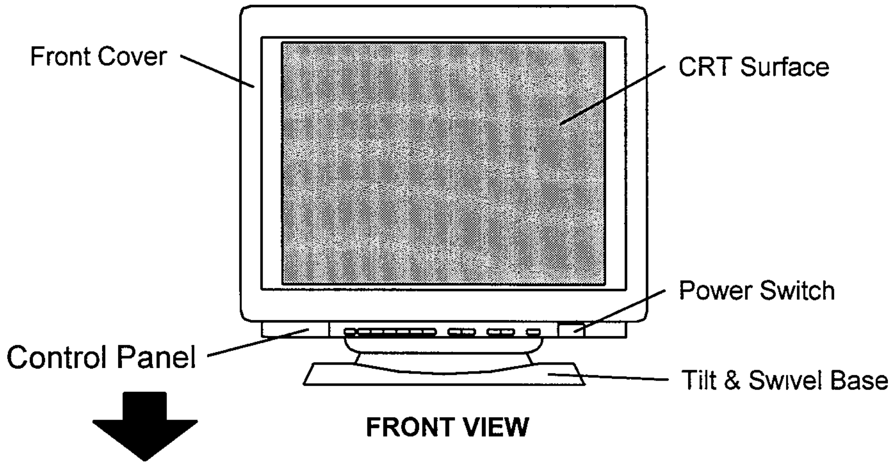


Fig. 2 Checking Circuit using jig

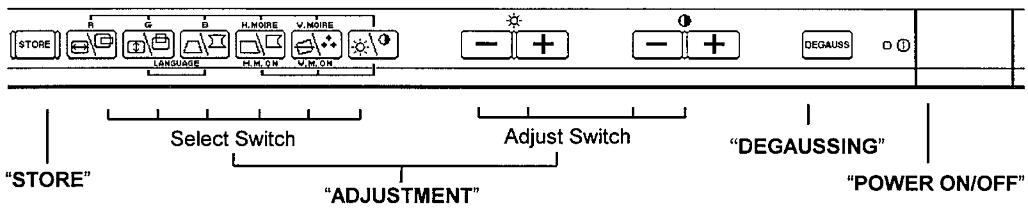
SPECIFICATIONS

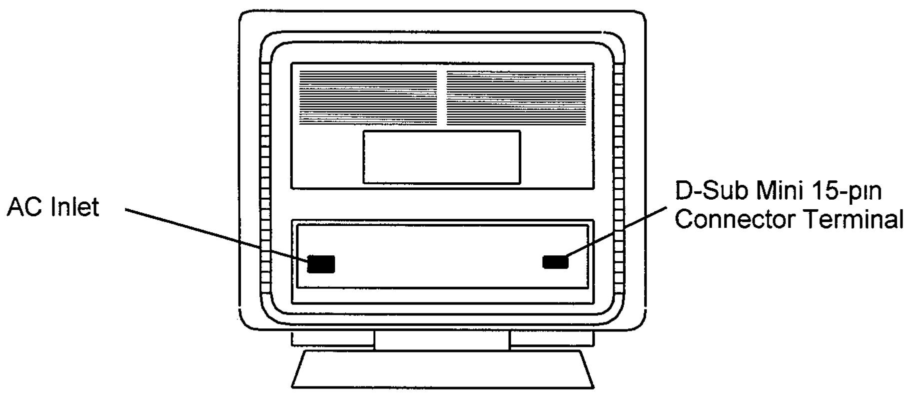
Model Name		CM751U	CM751ET		
Destination		North America	Europe		
Rated Voltage		AC 100-120 / 200-240 V, Automatically select. Provided with Power Circuit.			
Power Consumption		130 W nominal			
Color Display Tube (CDT)		19inch inches diagonal, 0.26 mm pitch Invar shadow mask, Black matrix, Anti-Reflection coat, Short persistence phosphors.			
Rated Frequency	Horizontal	31 - 93 kHz	31 - 93 kHz		
	Vertical	50 - 160 Hz			
Resolution	Horizontal	Up to 1600			
	Vertical	Up to 1280			
Signal Inputs		Red, Green and Blue analog video H/V separate, H/V composite or Sync .on Green sync.			
User Controls		Power Switch Degauss Store Contrast Brightness Horizontal Position, Size Vertical Position, Size Right Side Pincushion Right Trapezoid	Side Pincushion Trapezoid Language select Red,Green,Blue intensity Color Select Rotation H Moire Reduction V Moire Reduction		
Environmental Condition		Temperature . Humidity ·	Operation 5 ℃ to 40 ℃ 10% to 80%	Storage −20 ℃ to 60 ℃ 10% to 90 %	
Dimensions		448 (W) × 454 (H) × 460 (D) mm Including Tilt & Swivel base.			
Weight		24 kg			

CONTROLS



FRONT VIEW





REAR VIEW

SIGNAL TIMING CHART

	Signal		VGA 640×480	VESA 800×600 (85Hz)	VESA 1024×768 (85Hz)	
1	Video	Type	R/G/B Analog	R/G/B Analog	R/G/B Analog	
		Voltage	0.7 Vp-p	0.7 Vp-p	0.7 Vp-p	
		Set Up	None	None	None	
2	Sync	Type	H/V Separate	H/V Separate	H/V Separate	
		Amp.	TTL Level (Nega.)	TTL Level (Posi.)	TTL Level (Posi.)	
3	Video frequency		25.175 MHz	56.250 MHz	94.500 MHz	
4	Character (Letter)		640dots×480lines	800dots×600lines	1024dots×768lines	
5	Horizontal	Frequency	31 469 kHz	53.674 kHz	68.677 kHz	
		Front porch	0.636 μs (16cl)	0.569 μs (32cl)	0.508 μs (48cl)	
		Sync. width	3.813 μs (96cl)	1.138 μs (64cl)	1.016 μs (96cl)	
		Back porch	1.907 μs (48cl)	2.702 μs (152cl)	2.201 μs (208cl)	
		Blanking widht	6.356 μs (160cl)	4.409 μs (248cl)	3.725 μs (352cl)	
		Display time	25.422 μs (640cl)	14.222 μs (800cl)	10.836 μs (1024cl)	
		H.period (1H)	31 778 μs (800cl)	18.631 μs (1048cl)	14.561 μs (1376cl)	
6	Vertical	Frequency	59.940 Hz	85.062 Hz	85.000Hz	
		Front porch	0.318 ms (10H)	0.019 ms (1H)	0.015 ms (1H)	
		Sync. width	0.064 ms (2H)	0.056 ms (3H)	0.044 ms (3H)	
		Back porch	1.049 ms (33H)	0.503 ms (27H)	0.524 ms (36H)	
		Blanking widht	1 431 ms (45H)	0.578 ms (31H)	0.582 ms (40H)	
		Display time	15.253 ms (480H)	11.179 ms (600H)	11.183 ms (768H)	
		H.period (1H)	16.683 ms (525H)	11.756 ms (631H)	11 765 ms (808H)	
7	Scan System		(Non-interlaced)	(Non-interlaced)	(Non-interlaced)	
8	Remark					
9	Signal name		30C	54A	68A	

* VGA is a registered trademark of International Business Machined Corporation.
* VESA is a trademark of a nonprofit organization, Video Electronics Standard Association.

	Signal		VGSA 1280×1024 (85Hz)	VESA 1600×1200 (75Hz)	fHLL Adjustment signal	
1	Video	Type	R/G/B Analog	R/G/B Analog	R/G/B Analog	
		Voltage	0.7 Vp-p	0.7 Vp-p	0.7 Vp-p	
		Set Up	None	None	None	
2		Type	H/V Separate	H/V Separate	H/V Separate	
		Amp.	TTL Level (Posi.)	TTL Level (Posi.)	TTL Level (Neg.)	
3	Video frequency		157.500 MHz	202.500 MHz	24.000 MHz	
4	Character (Letter)		1280dots×1024lines	1600dots×1200lines	640dots×410lines	
5	Horizontal	Frequency	91.146 kHz	93.750 kHz	30.000 kHz	
		Front porch	0.406 μs (64cl)	0.316 μs (64cl)	0.417 μs (10cl)	
		Sync. width	1.016 μs (160cl)	0.948 μs (192cl)	3.917 μs (94cl)	
		Back porch	1 422 μs (224cl)	1.501 μs (304cl)	2.333 μs (56cl)	
		Blanking widht	2.844 μs (448cl)	2.765 μs (560cl)	6.667 μs (160cl)	
		Display time	8.127 μs (280cl)	7.901 μs (1600cl)	26.667 μs (640cl)	
		H.period (1H)	10.971 μs (1728cl)	10.667 μs (2160cl)	33.333 μs (800cl)	
6	Vertical	Frequency	85.024 Hz	75.000 Hz	50.000 Hz	
		Front porch	0.011ms (1H)	0.011 ms (1H)	2.967 ms (89H)	
		Sync. width	0.033 ms (3H)	0.032ms (3H)	0.133ms (4H)	
		Back porch	0.483 ms (44H)	0.491 ms (46H)	3.233 ms (97H)	
		Blanking widht	0.527 ms (48H)	0.533 ms (50H)	6.333 ms (190H)	
		Display time	11.235 ms (1024H)	12.800 ms (1200H)	13.667 ms (410H)	
		H.period (1H)	11 761 ms (1072H)	13.333 ms (1250H)	20.000 ms (600H)	
7	Scan System		(Non-interlaced)	(Non-interlaced)	(Non-interlaced)	
8	Remark					
9	Signal name		91A	94A	30w	

DESCRIPTION OF CIRCUIT

1. Power Supply Circuit

This model incorporates a wide range universal power supply utilizing a switching regulator (see block diagram in Figure 1).

1.1 AC input

AC input consists of AC inlet, EMI filter (C901~C907) and rectifier D901. Rectifier circuits adapt to full-wave method.Inrush current limiting circuit (R902) protects from excessive inrush current at initial stage of power on.

1.2 Circuit #1 :

Circuit 1 consists of chopper inductor (L910), chopper component (Q910),rectifier cmponent (D910,C911) and control IC (I911). R911,R912 andR913 detect input voltage and provide signal to I911 pin 3 which adjusts the pulse width based on the pin 3 voltage level to provide constant voltage output. Switching operation is performed by frequency synchronization with circuit #2, to control I911 pin 14 from circuit #2.

1.3 Switching Regulator circuit

Switching Regulator circuit is designed to handle variations of two conditions to ensure constant +B voltage to secondary circuit (Circuit 2) varying load conditions of video, (Circuit 3) varying horizontal frequencies and varying load conditions.

1.3.1 Circuit #2 :

Circuit 2 consists of chopper transformer (T930), chopper component (Q930) and control IC (I931). T930 detects output voltage and provides signal to I931 pin 1 which adjusts the pulse width based on the pin 1 voltage level to provide constant voltage output. If the secondary circuit becomes overloaded, primary current through T930 is detected at R931, R932 and stops the switching operation. Once the circuit has overloaded, the power switch must be turned off for a short period and then turned on to re-establish power.
Switching frequency is determined by time constant of C934.

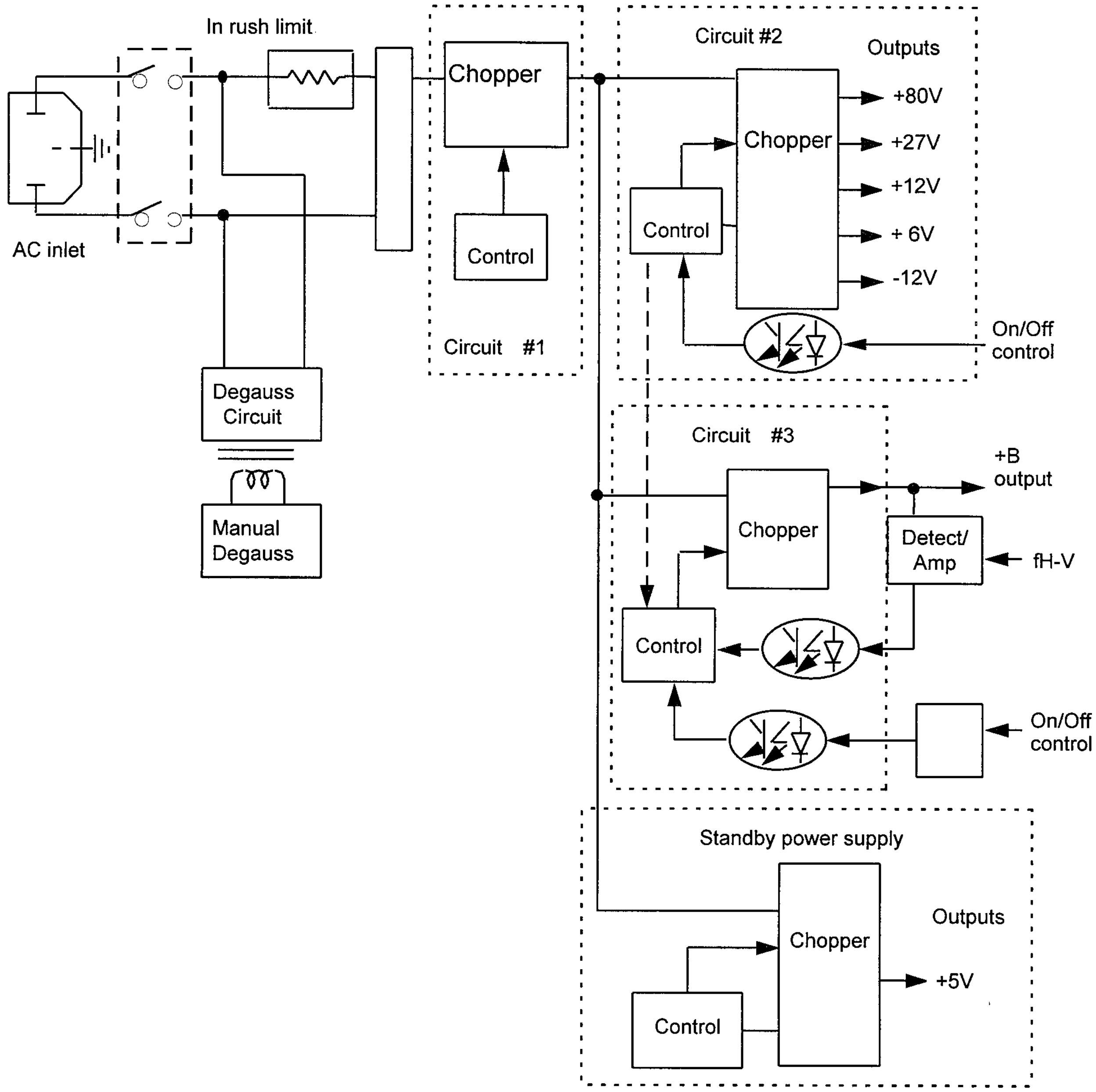
1.3.2 Circuit #3 :

Circuit 3 consists of chopper transformer (T920) and chopper component (Q920) mainly providing +B voltage for horizontal deflection and high voltage circuits. Regulator method is to detect secondary voltage at I971 and feed through photocoupler I923, providing constant voltage by controlling I921 pin 2 at primary circuit. Switching operation is performed by frequency synchronization with circuit #2, to control I921 pin 7 from circuit #2.
As mentioned above, while detecting secondary voltage at I971. I971 simultaneously receives voltage information from microprocessor which is proportional to the horizontal frequency. Therefore, output of circuit #3 is additionally regulated by the horizontal frequency. In this circuit, gate circuit (Q972, Q973) controls the switching operation at power control (I921) through photocoupler (I922).
This circuit is designed to receive power off command from the microprocessor, resulting in stopping chopper operation at the power supply.

1.4 Degaussing circuit

When the power is switched on, the CRT is degaussed automatically by current flowing through the degauss circuit while the relay (S91R) is closed. Degaussing current flows for approximately 20 seconds and stops after secondary circuit operation is stabilized causing relay (S91R) to be opened.
The circuit also allows for manual degauss by user switch at front panel which closes S91R through Q999, to allow current to flow through the degauss coil.

Figure 1 : Block diagram for power supply circuit



1.5 Standby power supply

The output is +5 V which is used mainly to drive the microprocessor circuit and input the signal selection circuit.
When the DC voltage which is applied from circuit #1 is applied to I940,I940 start oscillations. Once oscillations start, the switching transistor is driven by a voltage taken from the tertiary winding of T940 by way of R942 and R943 and applied to I940 Pin 1 The output voltage of the T940's tertiary winding is rectified by D942 and C942.
The main power supply (circuit#2 and circut#3) turns on (off) when a signal High (Low) is applied to the base of Q9D1 from the microprocessor circuit.

2. Sync Determination Circuit

Depending on the combination of Sync signal inputs and its polarity, Sync signal is fed to Sync Processing chip I304 which produces H/V sync. sep at its output.

3. Video Processing Circuit

3.1 Video Processor

The video input signal of 0.7 Vp-p is amplified to approximately 40 Vp-p by the video processing circuit and is fed to the cathode to drive the beam current.
This chassis incorporates a single chip video processor, I201, with three channels, one for each of R/G/B, which functions as the pre-amp of the inputs, OSD mixer and also gain control. A control signal from the microprocessor changes the amplifier gain of the video channels (R/G/B) together with white balance control.

Video Output circuit I202 amplifies R/G/B signals controlled by I201 to the enough level to drive Cathode of CRT. DC voltage of Cathode is determined by DC Cut off voltage from Cathode Clamp Circuit. DC Cut off voltage is generated at Level Shift Circuit which consists of I203, whose R/G/B channels are also controlled by microprocessor.

3.2 ACL Circuit

The current at the secondary winding of the flyback transformer is used to represent the CRT beam current. The current is measured and fed to the contrast control I204, D273 to limit the maximum beam current with negative feedback.

3.3 Blanking Circuit

Video blanking durling the beam retrace period is achieved by applying both horizontal and vertical blanking pulses to I201.

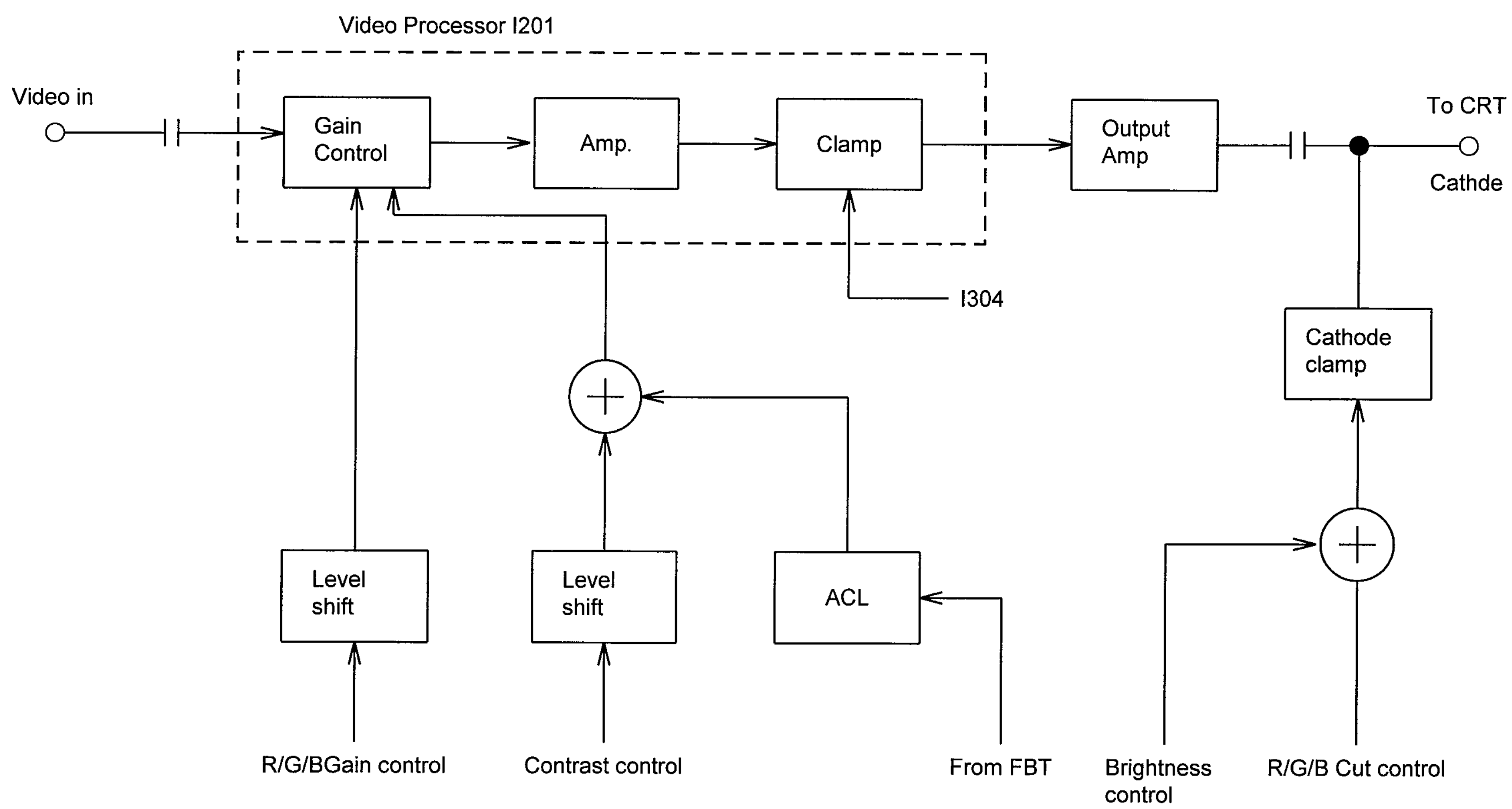
3.4 Precedence of Clamp Pulse Circuit

Clamp signal in Video Processor I201 receives pulses from I306, Precedence of Clamp pulse circuit. When the monitor receives signals, the input of I306 is Sync pulse from Sync Processing Circuit, I304. Without signals, I306' input is the pulse from Deflection Circuit controlled by microprocessor

3.5 OSD Circuit

I301, receives H/V pulses from Deflection Circuit and control signal from microprocessor, whose output feeds Clock signals (20MHz ~ 80MHz) synchronized with H pulse and control signals from microprocessor, whose output feeds OSD display signals in R/G/B and OSD blanking signal to OSD Mixer Circuit in I201.

Video Process Circuit



4. Horizontal Deflection and High Voltage Regulation Circuit

4.1 Horizontal Deflection Circuit

The purpose of the horizontal deflection circuit is to cause the CRT electron beam to be scanned horizontally by driving a current through the deflection yoke, synchronized by the H sync pulse. The circuit consists of an AFC circuit, made up of an H phase detector and VCO (voltage controlled oscillator), and the deflection output.

The H.sync signal is input to I701 where it is delayed and then input to a phase detector.The phase detector (I701) also accepts input from a sawtooth waveform which is provided by the deflection feedback (flyback pulse) through the Q702.The output of the phase detector creates an error voltage between the feedback pulse and the input pulse and is then fed to the VCO after processing by an AFC Filter.

The AFC circuit also receives controller voltage from the microprocessor' s output of the f_{H-V} signal, to center the free-run frequency within the pull-in range of 31 ~ 93kHz, achieving a wide pull-in range. The output pulse from the VCO is fed to the pre-drive and then output from I701 to the drive buffer Q701/Q702. The pre-drive circuit within I701 is duty cycle controlled by the f_{H-VP} signal from the microprocessor through a level shifter R719, R721, R722 and R725.

In the case of no Sync signals supplied or excessive frequency change, such as a signal timing change, the microprocessor provides a +B shutdown signal to the power supply and also provides a control signal which determines the +B shutdown period after receiving an input signal again.

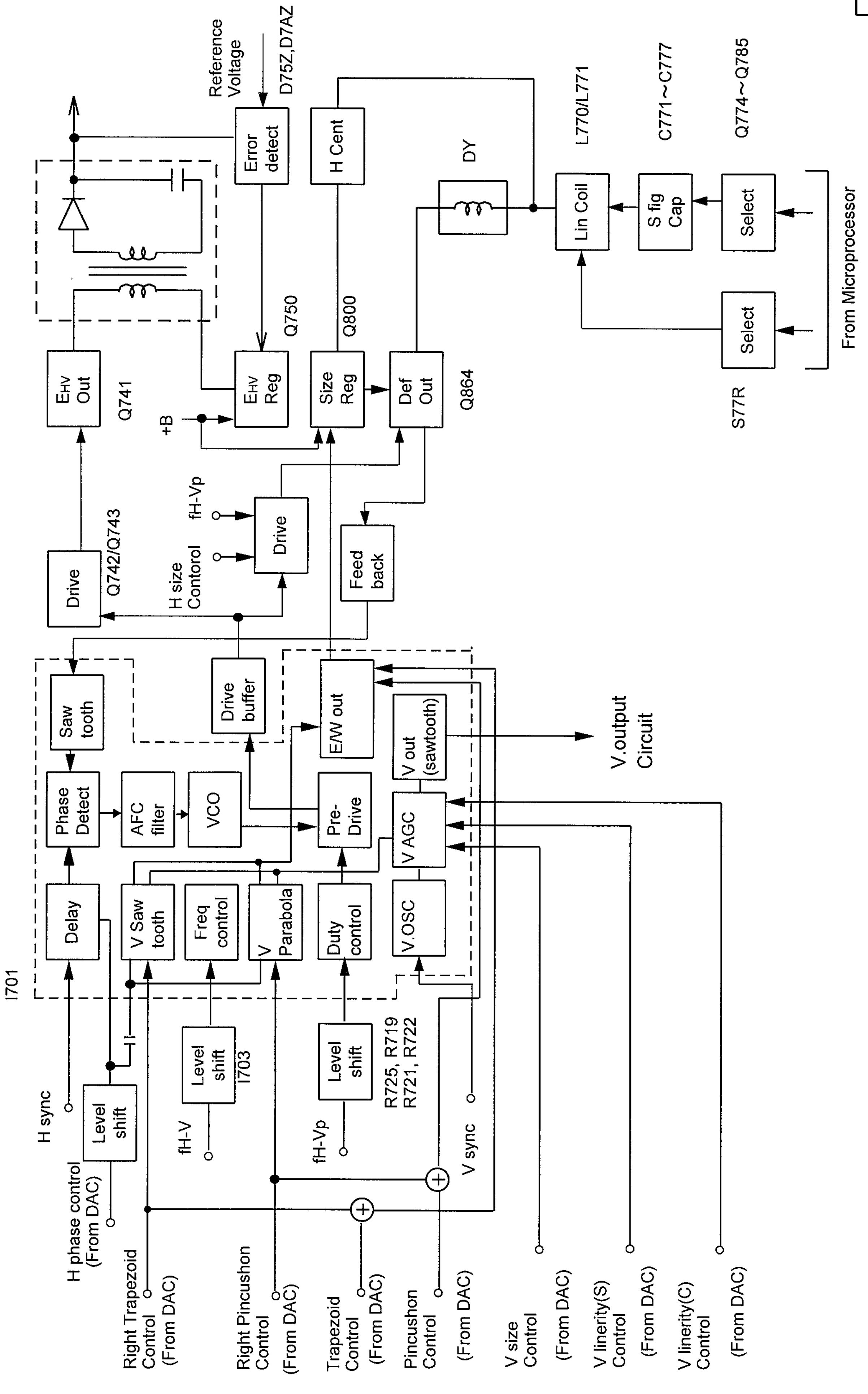
The deflection circuit of the C98 chassis has been separated from the high voltage regulation circuit to provide improved H linearity performance by utilizing the consonant conditions of the horizontal beam current characteristics. The S-consonant capacitors, C771~C777, are changed by Q774~Q785, which provide six stages of consonant conditions. The horizontal linearity coils L770~L771 are changed by S77R to provide two stages of H Linearity conditions.

The power supply parabolically modulates the +B voltage of the deflection circuit, based on the horizontal frequency, to provide a frequency - dependent voltage of between 53.5V and 174V to the deflection circuit.

4.2 High Voltage Regulation Circuit

The output pulse from I701 is also fed to the high voltage regulation circuit with the same design of consonant circuit as the horizontal deflection circuit. High voltage of 27.5kV is obtained by the step-up windings of the flyback transformer to drive the CRT anode. The high voltage is monitored by the E_{HV} error detection circuit. The error detection circuit functions by stepping the high voltage down and comparing it with the reference voltage of D75Z and D7AZ whose output controls Q750, the E_{HV} regulator.

Horizontal Deflection Circuit



4.3 Parabolic Waveform Generator Circuit

This circuit generates the parabolic waveform for the purpose of dynamic focus compensation.

4.4 Dynamic focus compensation waveform

Vertical saw tooth signal are input to I505 pin2. Output of pin 4 generates a parabolic waveform with an amplitude proportional to the vertical line frequency, after processing by I505.

Horizontal trigger pulses are input to the PLL (I503, pin 14), the stabilized output of which is then fed to I505 pin 17, through Gate I504. The output of I505 (pin 7) feeds the parabolic waveform, with an amplitude proportional to the horizontal line frequency (after processing by I505), to I501. I501 is a processor which combines horizontal and vertical parabolic output pulses to feed to the dynamic focus drive circuit.

4.5 Dynamic focus drive circuit

This monitor' s CRT includes a dynamic focusing electron gun to achieve sharp and uniform focus throughout the display area. The CRT's Focus anode receives a DC component of approximately 27% of the CRT anode voltage, combined with the AC voltage parabolic waveform of magnitude of 320Vp-p horizontal, and 180Vp-p vertical. DC focus voltage is obtained from a tap of the flyback transformer's bleeder resister, and fed to G3 focus electrode. Horizontal and vertical parabolic output pulses are amplified at Q560~Q563 and fed to the flyback transformer where they are combined with the DC component (27% of anode voltage). The potentiometers (focus 1, focus 2) at the flyback adjust the DC focus voltage. The focus 1 potentiometer mainly adjusts horizontal beam shape (vertical line width), and the focus 2 potentiometer mainly adjusts the vertical beam shape (horizontal line width) by optimizing the DC component of the parabolic waveform.

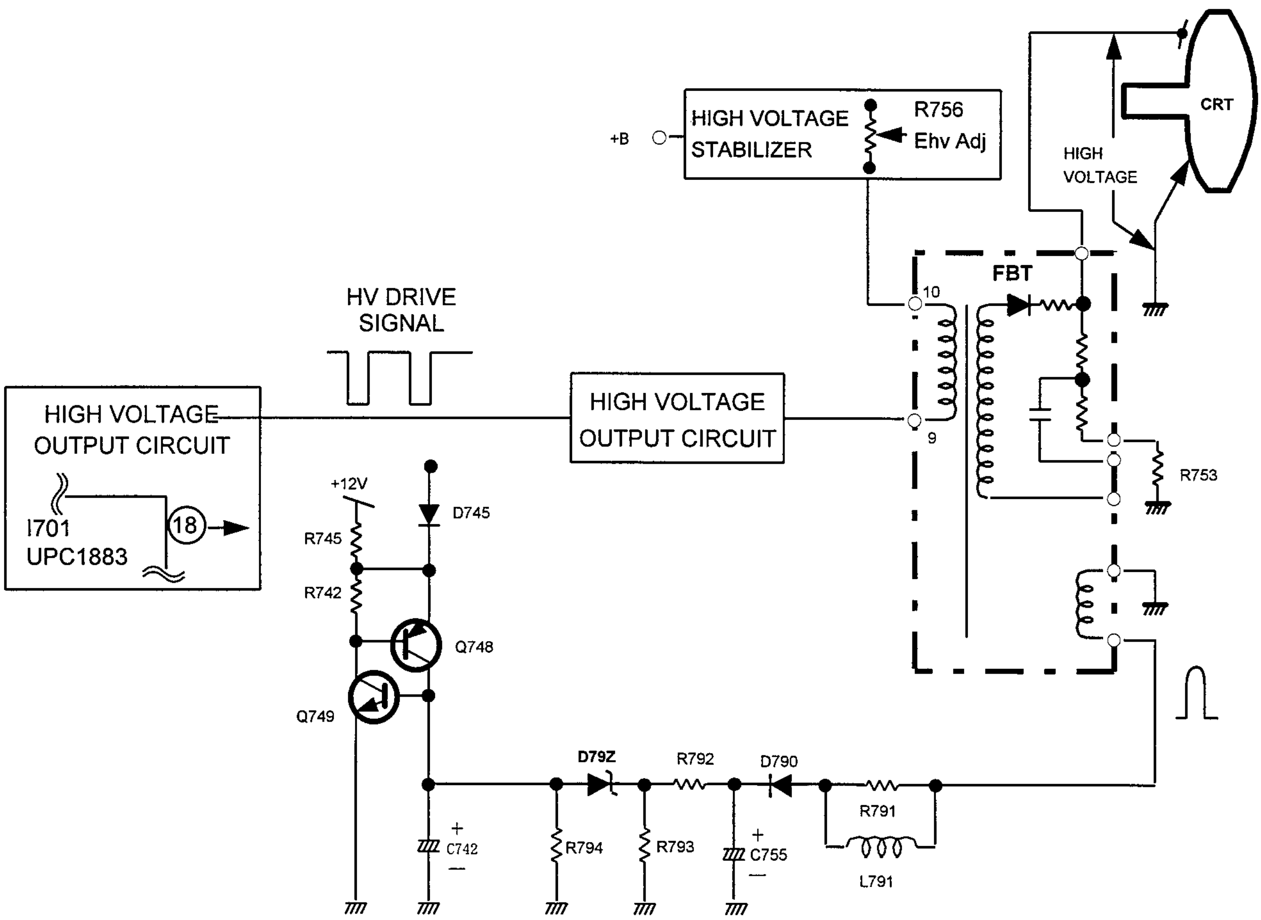
Left and right horizontal focus adjustment is achieved by changing the amplitude of the horizontal parabolic waveform at I505 via horizontal gain at R544. Top and bottom vertical focus adjustment is achieved by changing the amplitude of the vertical parabolic waveform via vertical gain at R543.

4.6High Voltage Hold-Down Circuit

C98 - Chassis uses a system in which an abnormal high voltage is detected to stop the +B voltage, so that the high voltage output will be declined to zero. The detail of the circuit operation is as follows.

When the voltage of D79Z anode which is proportional to the extreme high voltage exceeds the specified threshold voltage which is determined R792, R793, R794, D79Z, Q749 and Q748 are ON, and the HV DRIVE SIGNAL is connected to GND resulted in stopping the HIGH VOLTAGE OUTPUT CIRCUIT and elimination of the extreme high voltage.

HIGH VOLTAGE HOLD-DOWN CIRCUIT DIAGRAM



5. Vertical Deflection Circuit

The purpose of the vertical deflection circuit is to cause the CRT electron beam to be scanned vertically by driving a current through the deflection yoke, synchronized by the V sync pulse. V sync is input to the V oscillator circuit, I701, generating the vertical sawtooth wave. The vertical sawtooth wave is fed to I630 to be amplified of I630 to drive the vertical deflection yoke.

The vertical output stage consist of a DC feed back loop, with feedback of the DC component via the low pass filter, and an AC feedback loop with feedback of the AC component. The AC feedback current gose through feedback circuit where it is used to adjust the time constant.

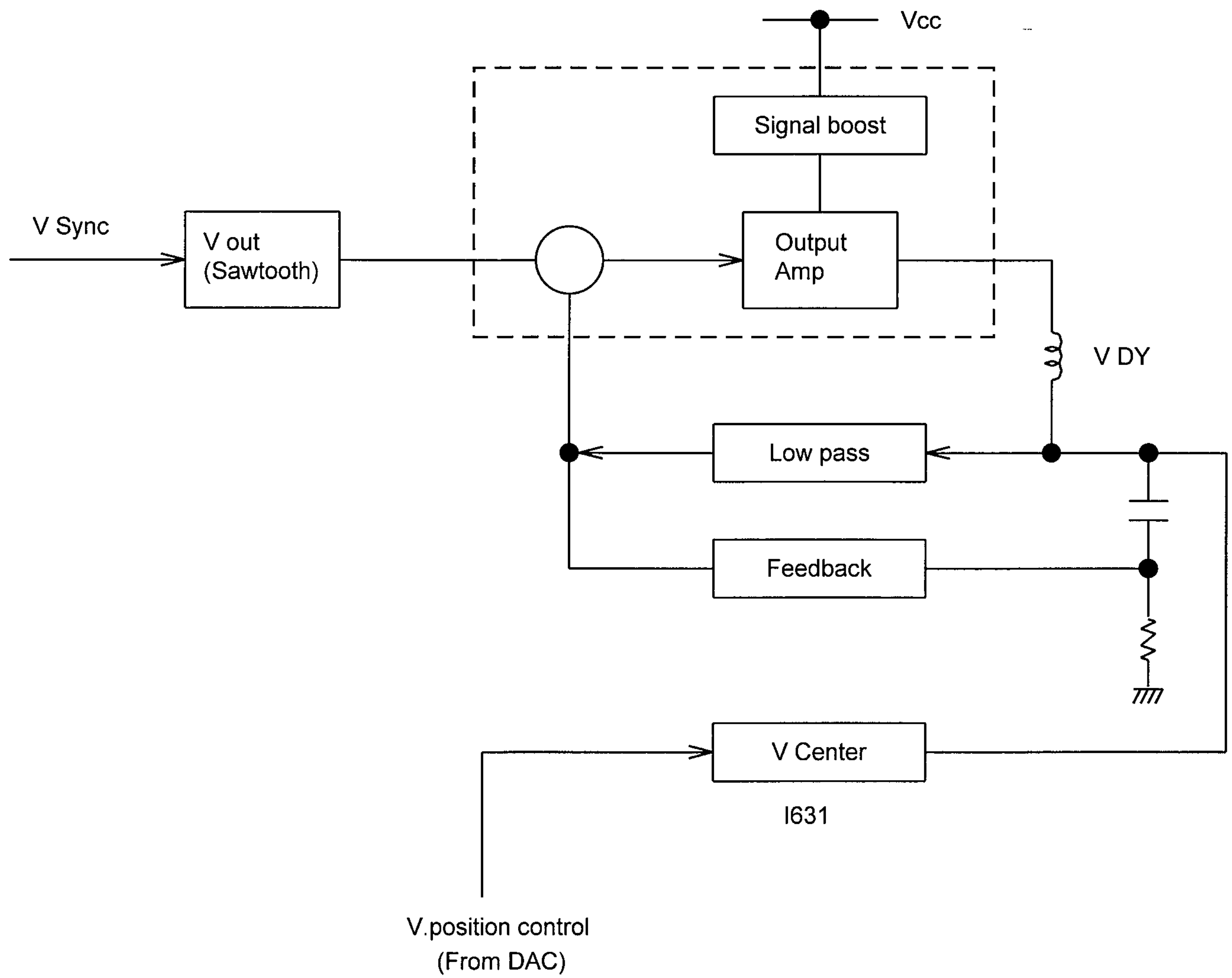
The vertical linerity after signal timing change is constant by fv-v voltage whitch is from microprcessor circuit.

The vertical size control signal from the microprocessor controls the voltage of I701 8pin through a level shifter R618,R619 and R606.

The output stage of I630 includes a ramp-up circuit with D630 and C635 achieving near doubling of the retrace pulse to minimize retrace time.

The vertical position control signal from the microprocessor is fed to the vertical deflection yoke through a vertical centering circuit of I631 to center the raster

Vertical Defrection Circuit



6. Microprocessor Circuit

The microprocessor circuit consists of the following four detailed circuits as shown in Figure.

1. Sync detect circuit
2. Front panel key data Input / Output (I/O)
3. Processing and memory
4. Control output

6.1 Sync detect circuit

The sync detect outside the microprocessor determines sync polarity, and feeds the polarity signal, STATE signal and H/V sync to the sync processing circuit within the microprocessor. The sync processing circuit detects these inputs, counts frequency, and feeds the polarity signal and frequency count to the Central Processing Unit (CPU).

6.2 Front panel key data Input / Output (I/O)

User input is received by the front panel keys which consists of : six select keys, four data keys (two pairs of+/−key), one Store key.

Select keys ·

1) H. Position / H. Size	4) Right Side Pin / Right Trapezoid
2) V. Position / V Size	5) Color Select / Rotation
3) Side Pin / Trapezoid	6) Contrast / Brightness

The H.moire control feature requires the user to press Right Side Pin / Right Trapezoid and Contrast / Brightness front panel keys simultaneously to enter the control mode. Adjustment is then made with +/− keys.

The V.moire control feature requires the user to press Color Select / Rotation and Contrast / Brightness front panel keys simultaneously to enter the control mode. Adjustment is then made with +/- keys.

Red, Green, and Blue color gain control feature requires that the user press the contrast / Brightness button and one of H. Position / H. Size (Red adjust), V Position / V Size (Green adjust), or side Pin / Trapezoid (Blue adjust) keys simultaneously to enter the control mode. Adjustment for the selected color is then made with +/−keys.

The language select feature requires the user to press V.Position / V.Size and Side Pin / Trapezoid front panel keys simultaneously to enter the control mode. Adjustment is then made with +/- keys.

Store key allows current settings (including picture size, geometry, and color setting) to be stored to non-volatile memory. The maximum memory capacity is for 26 presets including factory standard settings.

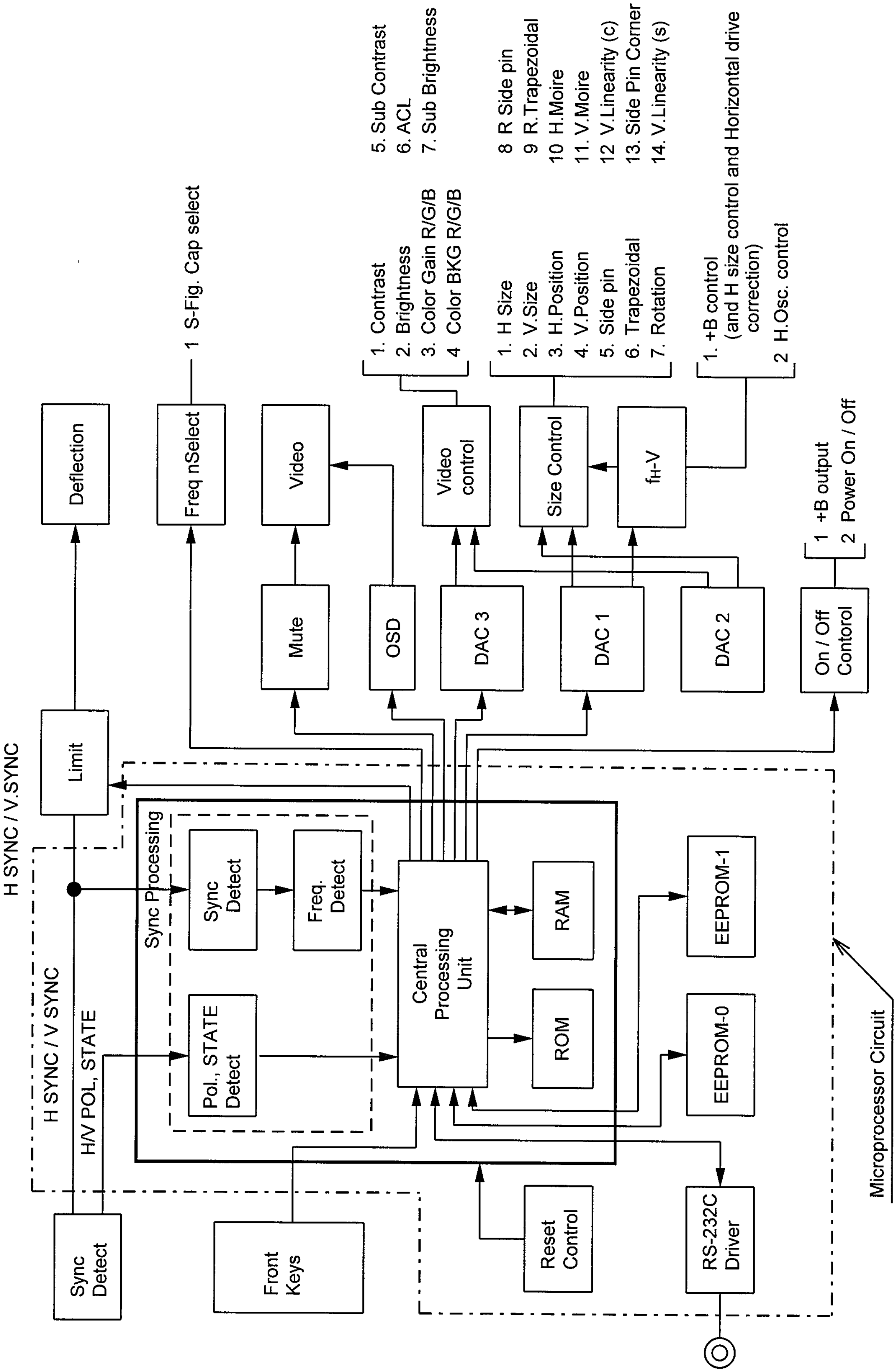
6.3 Processing and memory

I102 is an 8 bit microprocessor which equips with ROM and RAM for system program, and sync processing circuit. Data memory consists of 2 EEPROM chips, I104, I105 for preset data.

6.4 Control output

The microprocessor output controls the DAC, the OSDOn/Off controls, mute circuit, and limit circuit. The input control signal to the DAC, I001, I002 I051, is fed to video control (Contrast, Brightness, R/G/B color gain, R/G/B color BKG, sub Contrast, Sub Brightness and ACL), Size control (H/V size, H/V position, side pin correction, trapezoidal correction, rotation, right sidepin correction, right trapezoidal correction, H/V moire control, V.Linearity(S), V.Linearity(C) and Side pin Corner correction), and fH-V selection (+B control and H size control and horizontal drive correction, H. Osc. control with VCO control). The input control signal to the OSD,I301,provides the function that the monitor shows guidance for adjustment on the screen by generating video signal as character pattern and feeding it to the video amplifier. On/Off control provides 2 power saving modes by stopping +B output if one of H sync and V sync is not supplied (Standby mode) and by stopping main power supply if both H and V sync are not supplied. The mute circuit brings video output to black level when timing signal changes or the monitor goes into the power saving mode. The limit circuit consists of a gate, I704 and I706. In case that the frequency is normal, CPU opens the gate and H/V sync is fed to the deflection circuit via the gate. If not, CPU closes the gate to prevent the deflection circuit oscillating at illegal frequency.

This chassis is capable of communicating with a PC through an RS-232C serial communication port for factory adjustments, by making access to the microprocessor through the RS-232C I/O driver, I107



Deflection
Freq nSelect
1 S-Fig. Cap select
Video
Video control
1. Contrast
2. Brightness
3. Color Gain R/G/B
4 Color BKG R/G/B
5. Sub Contrast
6. ACL
7. Sub Brightness
Size Control
1. H Size
2. V.Size
3. H.Position
4. V.Position
5. Side pin
6. Trapezoidal
7. Rotation
8 R Side pin
9 R.Trapezoidal
10 H.Moire
11. V.Moire
12 V.Linearity (c)
13. Side Pin Corner
14. V.Linearity (s)
fH-V
1. +B control (and H size control and Horizontal drive correction)
2 H.Osc. control
Mute
OSD
DAC 3
DAC 1
DAC 2
On / Off Contorol
1 +B output
2 Power On / Off
Limit
H SYNC / V.SYNC
H SYNC / V SYNC
H/V POL, STATE
Sync Processing
Sync Detect
Freq. Detect
Pol., STATE Detect
Central Processing Unit
RAM
ROM
EEPROM-1
EEPROM-0
Sync Detect
Front Keys
Reset Control
RS-232C Driver
Microprocessor Circuit

7. Power Save Function

The C98 chassis is capable of power savings by sensing of the sync input conditions by the microprocessor. The microprocessor can identify two sync conditions, (1) No detection of H.sync, (2) No detection of V sync.

The following table shows the details of the Power save mode.

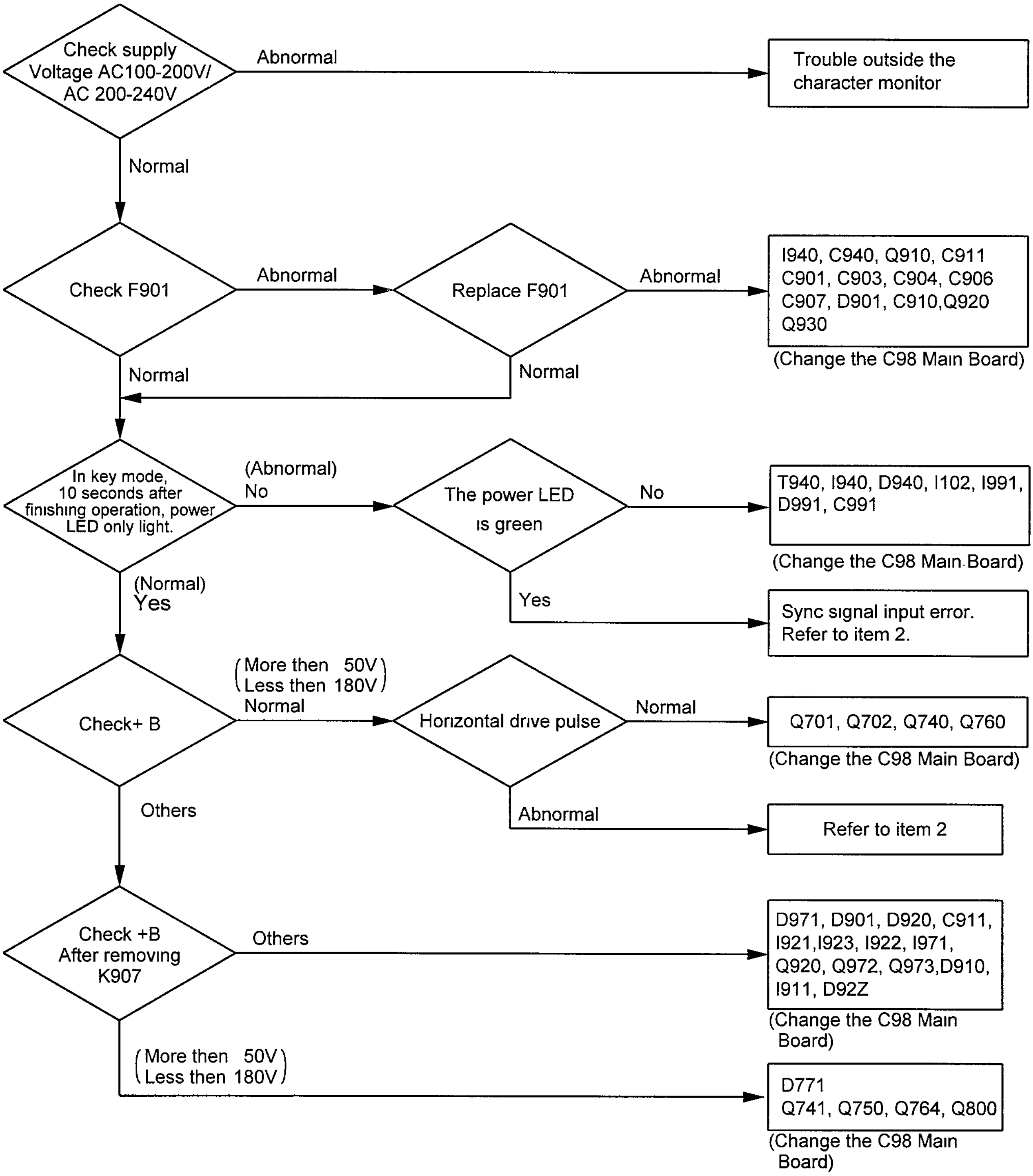
Table : Power Save Function

Sync	H Sync	Yes	No	Yes	No
	V Sync	Yes	Yes	No	No
VESA Standard	Name	Normal	Standby	Standby	Off
	Recovery Time	N/A	Short	Short	System Dependent
	Recovery Time	None	Minimam	Minimam	Maximum
Circuit Operation	H. Deflection	Normal operation	Stop	Stop	Stop
	V Deflection	Normal operation	Stop	Stop	Stop
	Video	Normal operation	Mute		Mute
Power LED		Lighting Green	Flashing quickly	Flashing quickly	Flashing slowly
Power consumption (Typical) . AC (120V)		All White : 125W All Black : 90W	25W	25W	4W

TROUBLESHOOTING

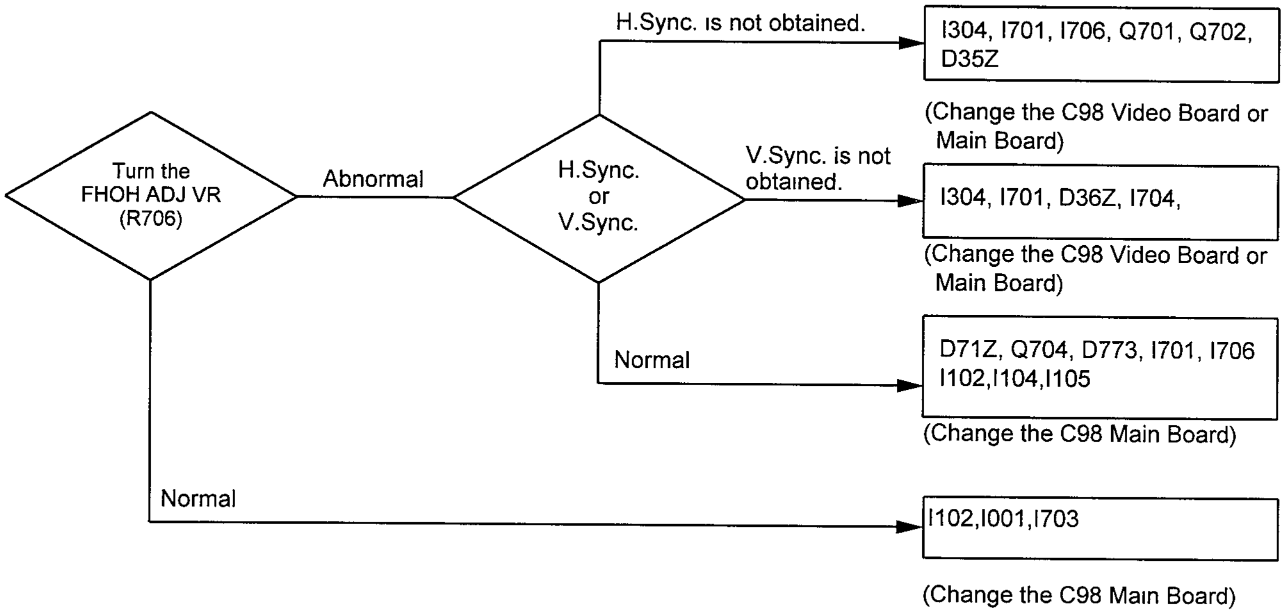
1. RASTER DOES NOT APPEAR

Relevant circuit : Power circuit, Horizontal deflection circuit, High voltage limitter circuit



2. SYNVHRONIZATION IS NOT OBTAINED

Relevant circuit . Sync. input circuit, Deflection circuit



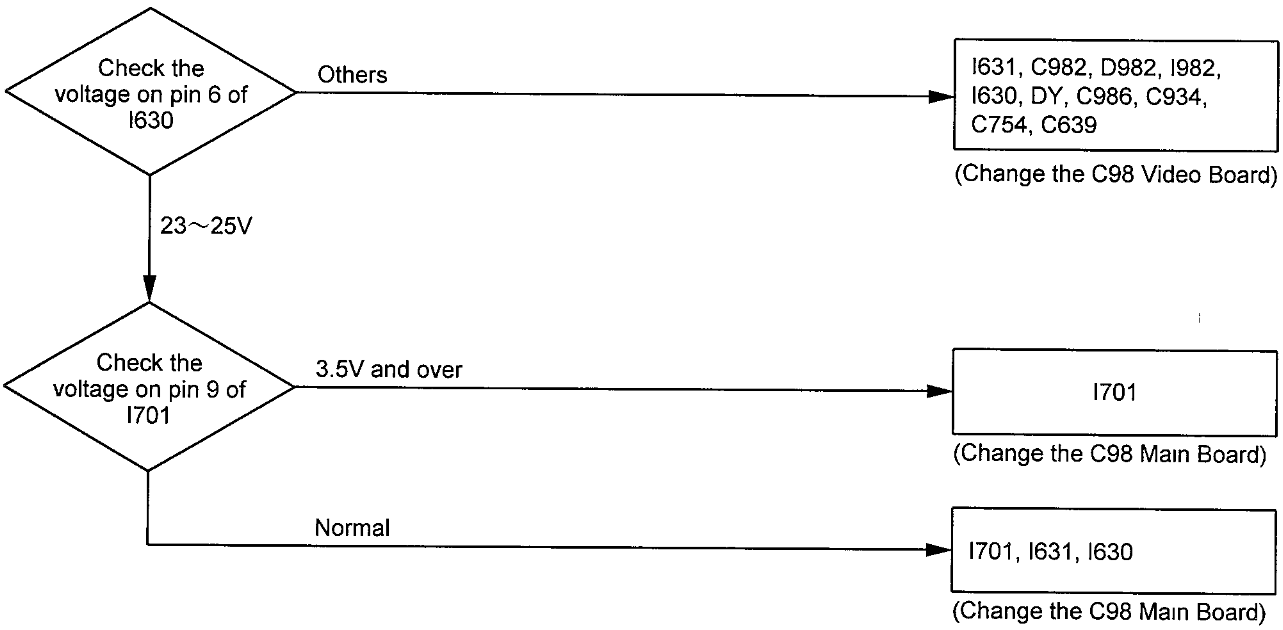
3. VERTICAL SINGLE LINE

Relevant circuit : Horizontal output circuit

DY faulty, Q800, D771, Q764, Q760

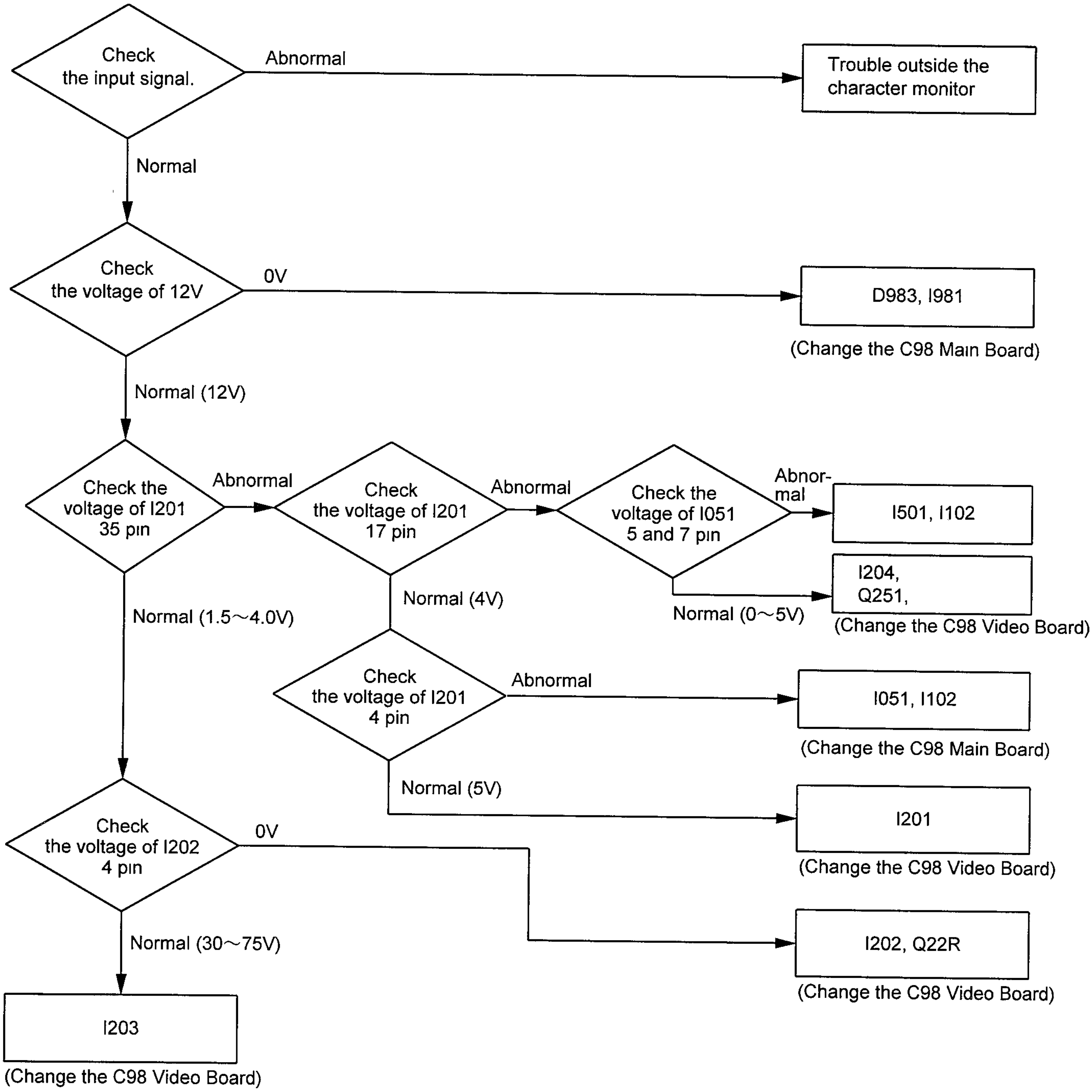
4. HORIZONTAL SINGLE LINE

Relevant circuit · Vertical deflection circuit



5. COLOR DOES NOT APPEAR

Relevant circuit : Video amplifier circuit



Note · Troubleble in the red circuit is shown in this diagram as representative color.
Refer to : when green does not appear, and when blue does not appear.

ADJUSTMENTS

1. Power supply

1.1 PFC output voltage adjustment.

(1) Turn the switch of the unit off.
(2) Place a jumper wire across C922 on main-p.w.b to disable + B output voltage.
(3) Turn the switch of the unit on.
(4) Receive normal cross hatch pattern of signal 94A.
(5) Connect a Digital multimeter between + and − of C911
(6) Adjust R916 to 373 ± 2V.
(7) Turn the switch of the unit off.
(8) Remove the jumper wire from C922.

1.2 Heater voltage adjustment for color display tube.

(1) Turn the switch of the unit off.
(2) Place a jumper wire across C922 on main-p.w.b to disable + B output voltage.
(3) Turn the switch of the unit on.
(4) Receive reverse cross hatch pattern of signal 94A.
(5) Connect a Digital multimeter between the T1(GND)and T2 on the CRT neck board.
(6) Adjust CDT heater voltage to 6.2 ± 0.05V using R938.
(7) Turn the switch of the unit off.
(8) Remove the jumper wire from C922.

1.3 +B voltage adjustment

(1) Turn the switch of the unit off.
(2) Adjusting horizontal free running frequency must be finished before this adjustment.
(3) Receive a normal cross hatch signal.(See table 1.for proper signal timing)
(4) Connect a Digital volt meter between Q800 collector(or R807 on the side of Q800)and GND.
(5) Turn the switch of the unit on.
(6) Adjust R973 to the proper +B voltage value as outlined in table 1
(7) Receive reverse cross hatch pattern of signal 30C and check the +B voltage is at 53.5 ± 2.0V.

Table 1

Model	signal	+B voltage
CM751	94A	154±1.0V

2. Deflection circuit adjustment

2.1 Horizontal free running frequency and Horizontal drive pluse duty adjustment

(1) Turn the switch of the unit off.

(2) Place a jumper wire across C922 on main-p.w.b to disable +B output voltage.

(3) Connect a 1 Kohm resister between R700 (Q701 side) and D71Z's cathode.

(4) Place a jumpwer wire between I701 26pin and GND.

(5) Connect frequency counter between R700 (Q701 side) and GND.

(6) Turn the switch of the unit on.

(7) Receive the signal, as indicate on table 2, for frequency Horizontal high(fHH), and adjust R706 to the value indicated on table 2.

(8) Receive the signal 30W for fHLL and check the fHOL in table 2.

(9) Connect a oscilloscope's probe (10:1) to Q760's drain.

(10) Ajust tHD to table 2 using R717

(11)Turn the switch of the unit off .

(12) Remove the adjustment jig.

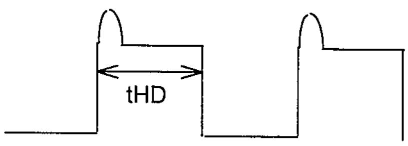


Table 2

			R717		R724	
	fHLL	fHOL	fHLL	tHD	fHH	fHOH
CM751	30W	30.0±0.7kHz	30W	19.8±0.2 μ s	94A	93.75±0.1kHz

2.2 High voltage adjustment

(1) Turn the switch of the unit off.

(2) Connect a high voltage meter, whitch is capable to measure up to 40kV, between CDT anode and GND.

(3) Receive normal cross hatch pattern of 94A signal.

(4) Turn the switch of the unit on.

(5) Adjust high voltage level to 27.5 ± 0.3kV using R756.

(6) Turn the switch of the unit off.

(7) Remove the adjustment jig.

3. Video Circuit

Prior to the video circuit adjustment, all Sync.And Deflection circuit adjustment must be completed. The monitor must have been warmed up for more than 60 minutes. Video signal must be terminated with 75Ω and should provide the correct voltage at the monitor end.

[Pre-setting before adjustment]

* Output voltages of DAC

Function	Pin No.	Output Voltage
R Color	#9 pin (I051)	5V (FF)
G Color	#6 pin (I051)	5V (FF)
B.Color	#8 pin (I051)	5V (FF)
Contrast	#7 pin (I051)	5V (FF)
Brightness	#4 pin (I051)	0V (FF)
Sub Brightness	#8 pin (I002)	2.5V (7F)
Sub Contrast	#5 pin (I051)	2.5V (7F)
R.BKG	#15 pin (I051)	5V (00)
G.BKG	#14 pin (I051)	5V (00)
B.BKG	#16 pin (I051)	5V (00)
ACL	#17 pin (I051)	2.5V (7F)

Note 1) Color Analyzer : Minolta CA 100 or equivalent.

3.1 Cut off adjustment

(1) Receive a signal of 94A with a blank signal pattem.(Black video)

(2) Connect a high impedance voltmeter (more than 1000MΩ) to the Screen terminal (G2) on the CRT neck board. Adjust the Screen voltage pot on FBT to see 600 ± 10V.

(3) Adjust R,G & B,BKG to show the CIE coordinate of X=0.313±0.03, Y=0.329±0.03 at 1.2 cd/m2 (0.35ft-L).
If it looks difficult to obtain X and Y readings mentioned above, do the followings to obtain these numbers.

1) Reset Sub Brightness to 1.9V (9F) or 3.1V (60).

2) Reset Sub Brightness to 0.93V (CF) or 4.1V (30).

3) Reset G2 to 550V or 650V

3.2 White balance adjustment (Color 2)

(1) Receive a signal of 94A with a 100×100mm window pattern.

(2) Set Brightness Control to the center (2.5V · 7F).

(3) Adjust the light output to 80 cd/m2 (23ft-L) at the center of screen by adjusting Sub Contrast Control.

(4) Adjust the white balance of high light output by Green and Blue color adjustments to read CIE coordinate of X=0.313 ± 0.008, Y=0.329 ± 0.008.

(5) Adjust Contrast Control to read 3 cd/m2 (1 ft-L).

(6) Adjust Red and Blue BKG to read the same CIE coordinate shown in 3.2.(4)

(7) Adjust Contrast Control to read 80 cd/m2 (23ft-L) and then confirm CIE coordinate. If it shown out range, go back to 3.2(4)

(8) Register the readings of R/G/B BKG and Color data (Color 2) to the microprocessor.

3.3 White balance adjustment (Color 1)

(1) Receive a signal of 94A with a 100×100mm window pattern.

(2) Set brightness Control to the center (2.5V . 7F).

(3) Adjust the light output to 80 cd/m2 (23ft-L) at the center of screen by adjusting Sub Contrast Control in Color 2 mode.

(4) Select "Color Select" to Color 1.

(5) Adjust the white balance of high light output by Green and Blue color adjustments to read CIE coordinate of X=0.283 ± 0.008, Y=0.298 ± 0.008

(6) Register the readings of Color dada (Color 1) to the microprocessor.

3.4 White balance adjustment (Color 3)

(1) Receive a signal of 94A with a 100×100mm window pattern.

(2) Set Brightness Control to the center (2.5V 7F).

(3) Adjust the light output to 80 cd/m2 (23ft-L) at the center of screen by adjusting Sub Contrast Control in Color 2 mode.

(4) Select "Color Select" to color 3.

(5) Set Green color data 48digit lower than Green color data of Color 2.

(6) Adjust the white balance of high light output by Red and Blue color adjustments to read CIE coordinate of X=0.336 ±0.008, Y=0.352±0.008.

(7) Register the readings of Color data (Color 3) to the microprocessor.

3.5 Brightness adjustment

(1) White balance adjustment must have been done before Brightness adjustment.

(2) Receive signal of 94A with a blank signal pattem.(Black video)

(3) Set Brightness and Contrast Control to their maximums.

(4) Ambient light on the surface of the CRT should show lower than 50 lux.

(5) Select "Color Select" to Color 1.

(6) Adjust the light output to 1.2 cd/m2 (0.35 ft-L) at the center of screen by adjusting Sub Brightness Control.

(7) Receive a signal or 94A with a window pattem (100 × 100 mm)

(8) Adjust the light output to 143 cd/m2 (42 ft-L) at the center of screen by adjusting Sub Contrast Control.

(9) Receive a signal of or 94A with a full white patterm.

(10) Set R/G/B color to the maximum (5V , FF)

(11) Adjust the light output to 120 cd/m2 (35ft-L) at the center of screen by adjusting ACL adjustment.

(12) Register the readings of Sub Brightness, Sub Contrast and ACL to the microprocessor.

4.1 Focus adjustment

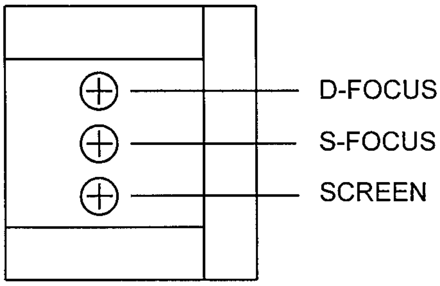
(1) Receive signal 94A with a full screen "E" characters.

(2) Set user Contrast control to its maximum.

(3) Set user Brightness control so that the back ground raster is just diminished.

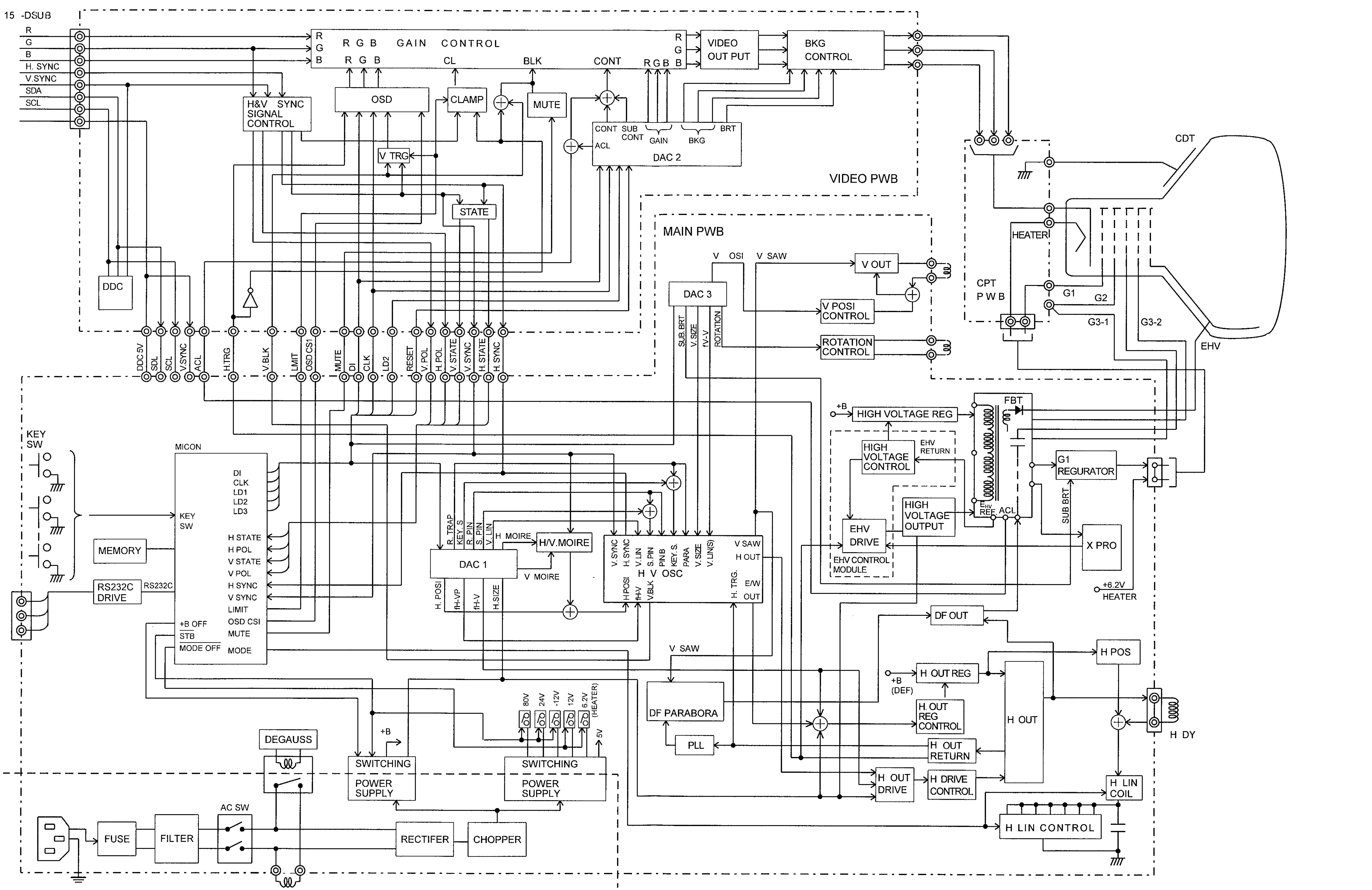
(4) Adjust S-Focus control on the FBT so that focus at the middle points between the center of the screen to its best.

(5) Adjust D-Focus control on the FBT so that focus at four corners of the screen to its best.



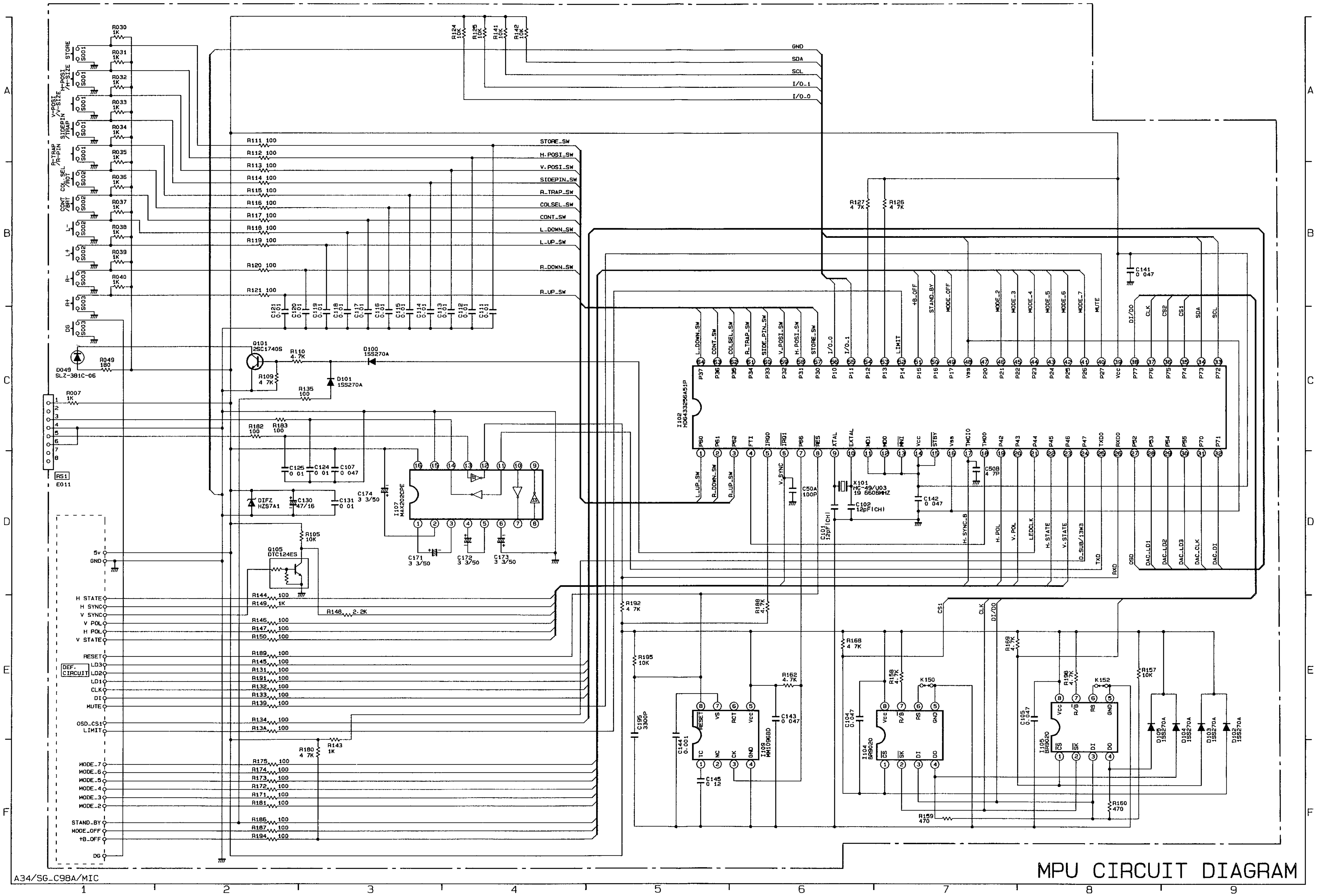
Position of FBT Controls

BLOCK DIAGRAM

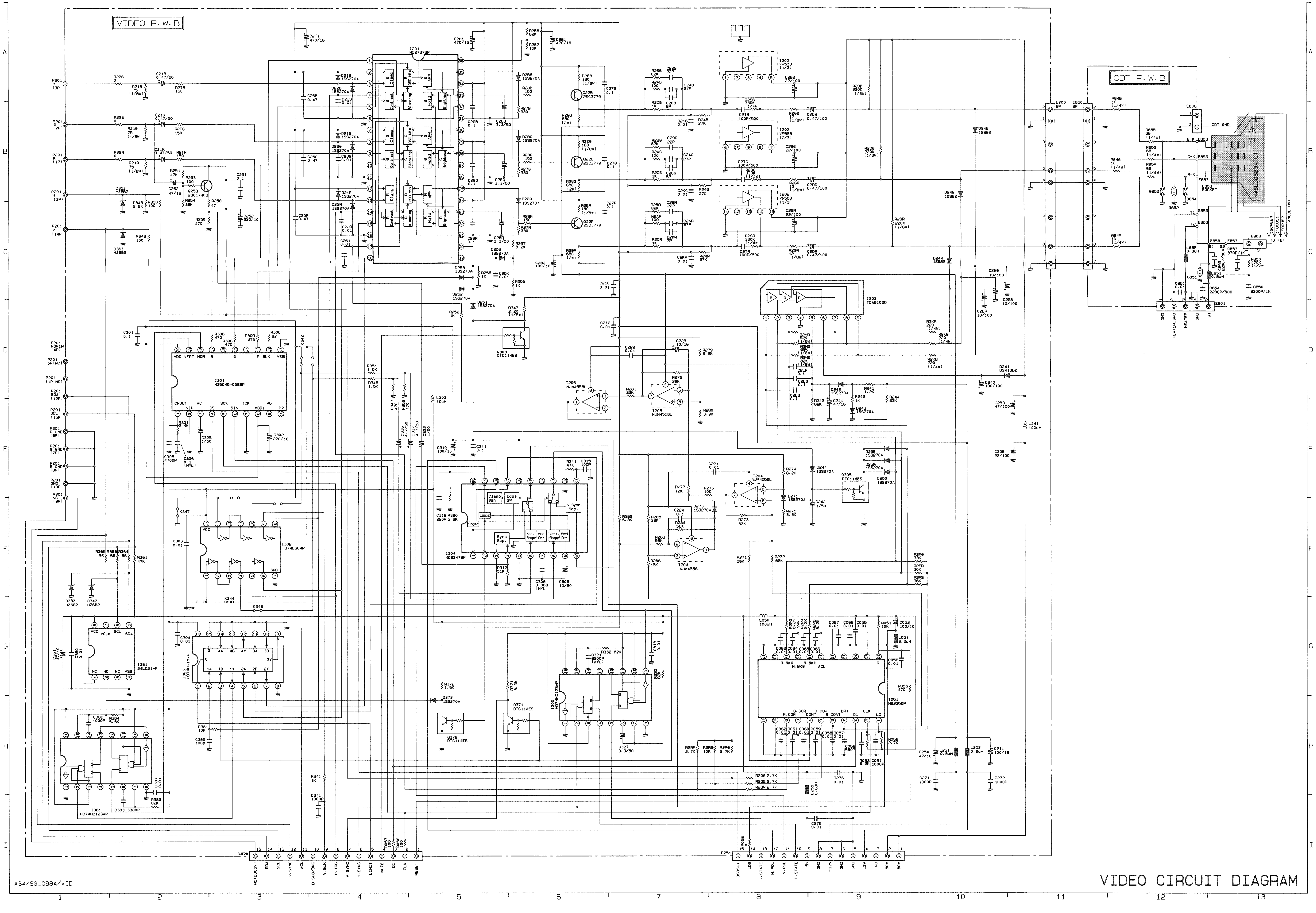


BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOTE : Components marked with a ⚠ have special characteristics important to safety. Before replacing any of there components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

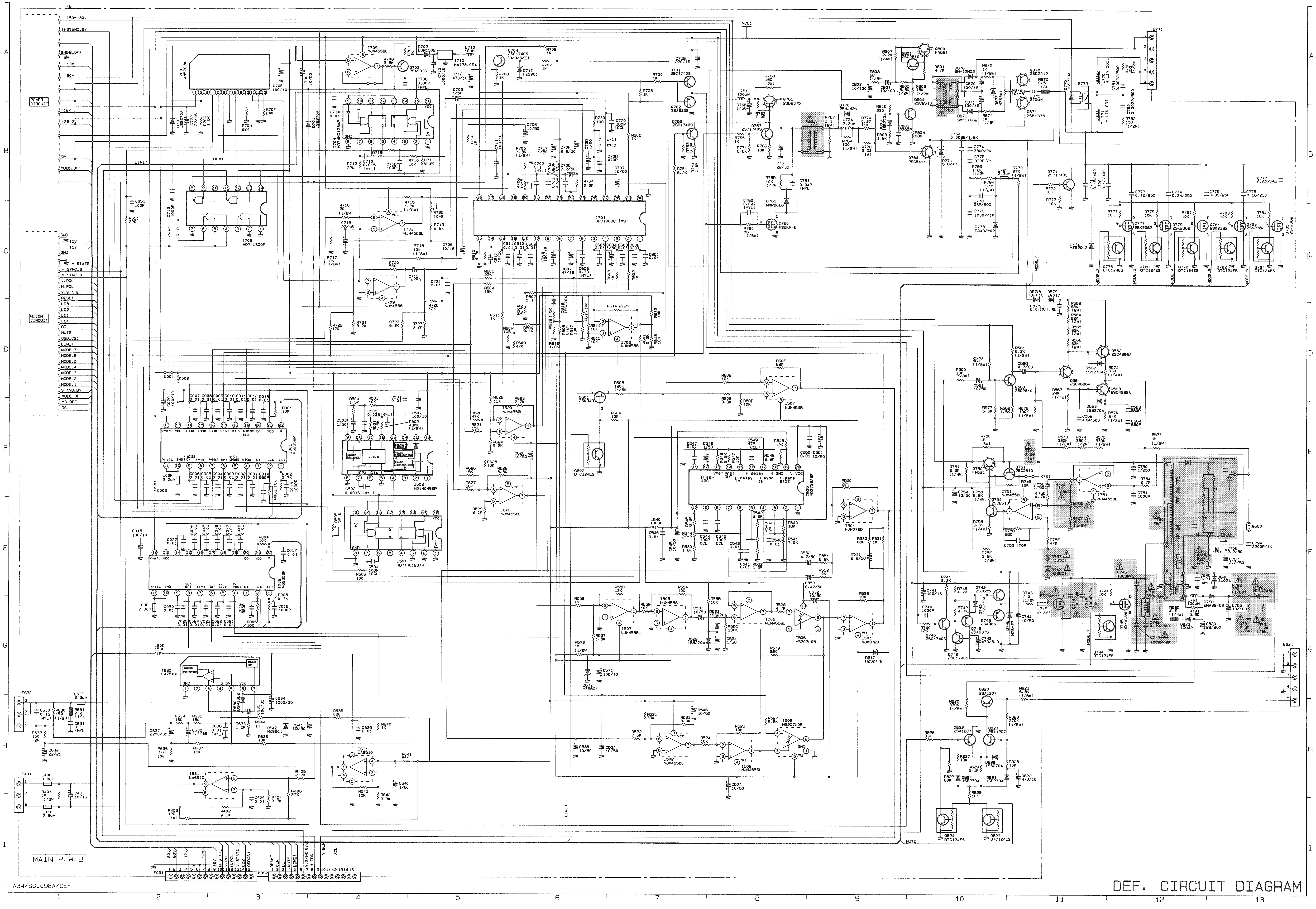


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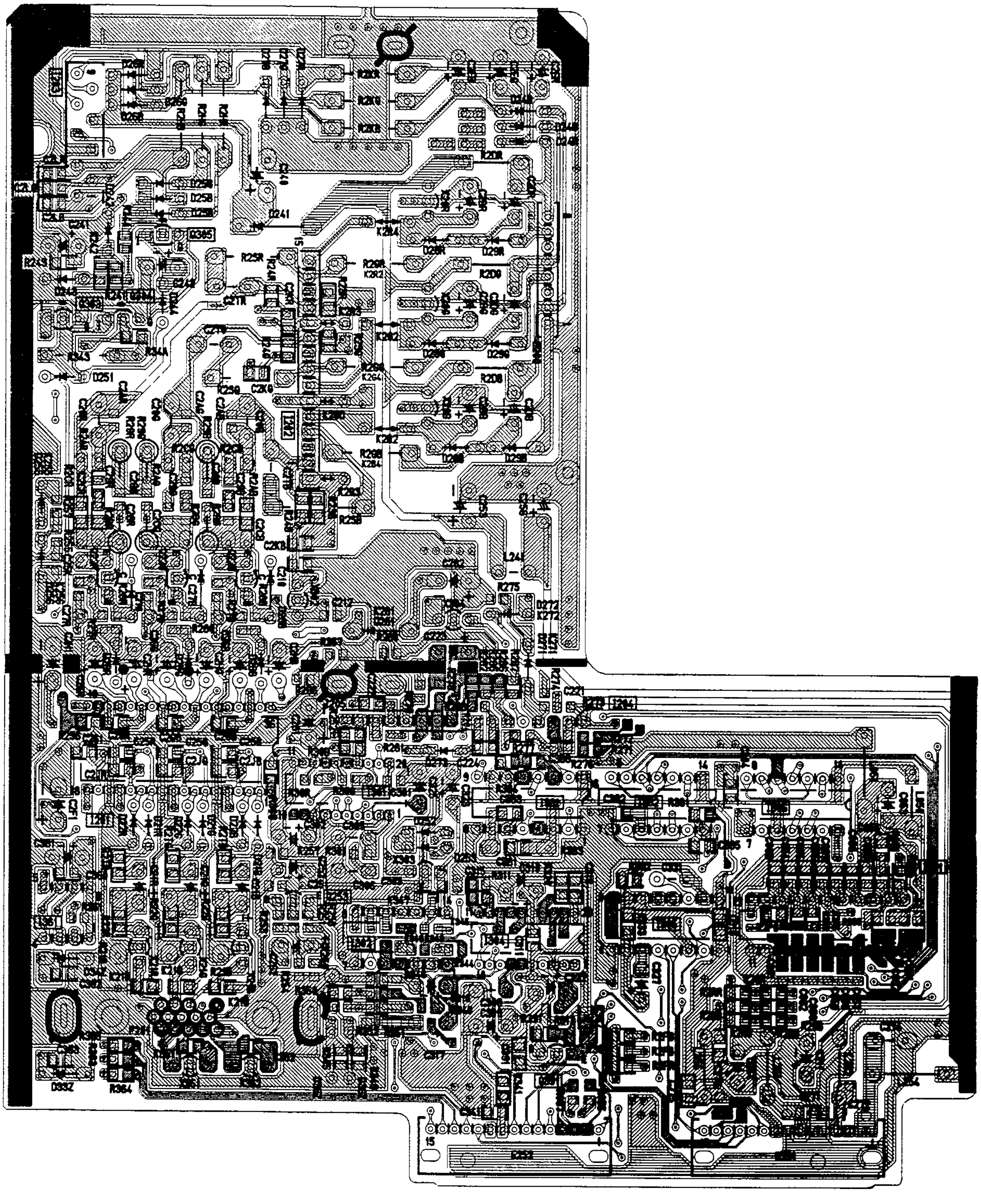
VIDEO CIRCUIT DIAGRAM

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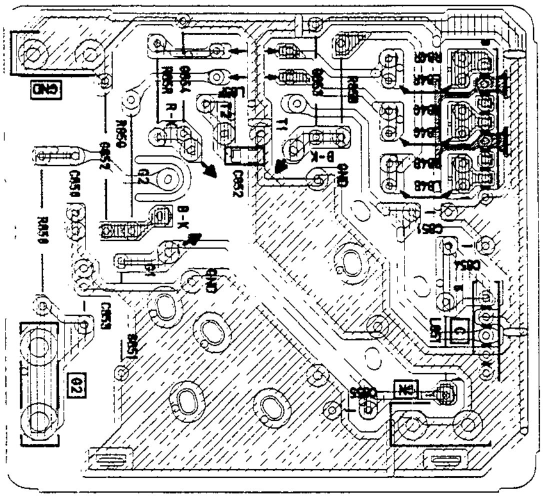


DEF. CIRCUIT DIAGRAM

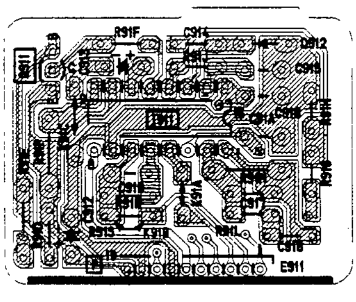
VIDEO P.W.B.



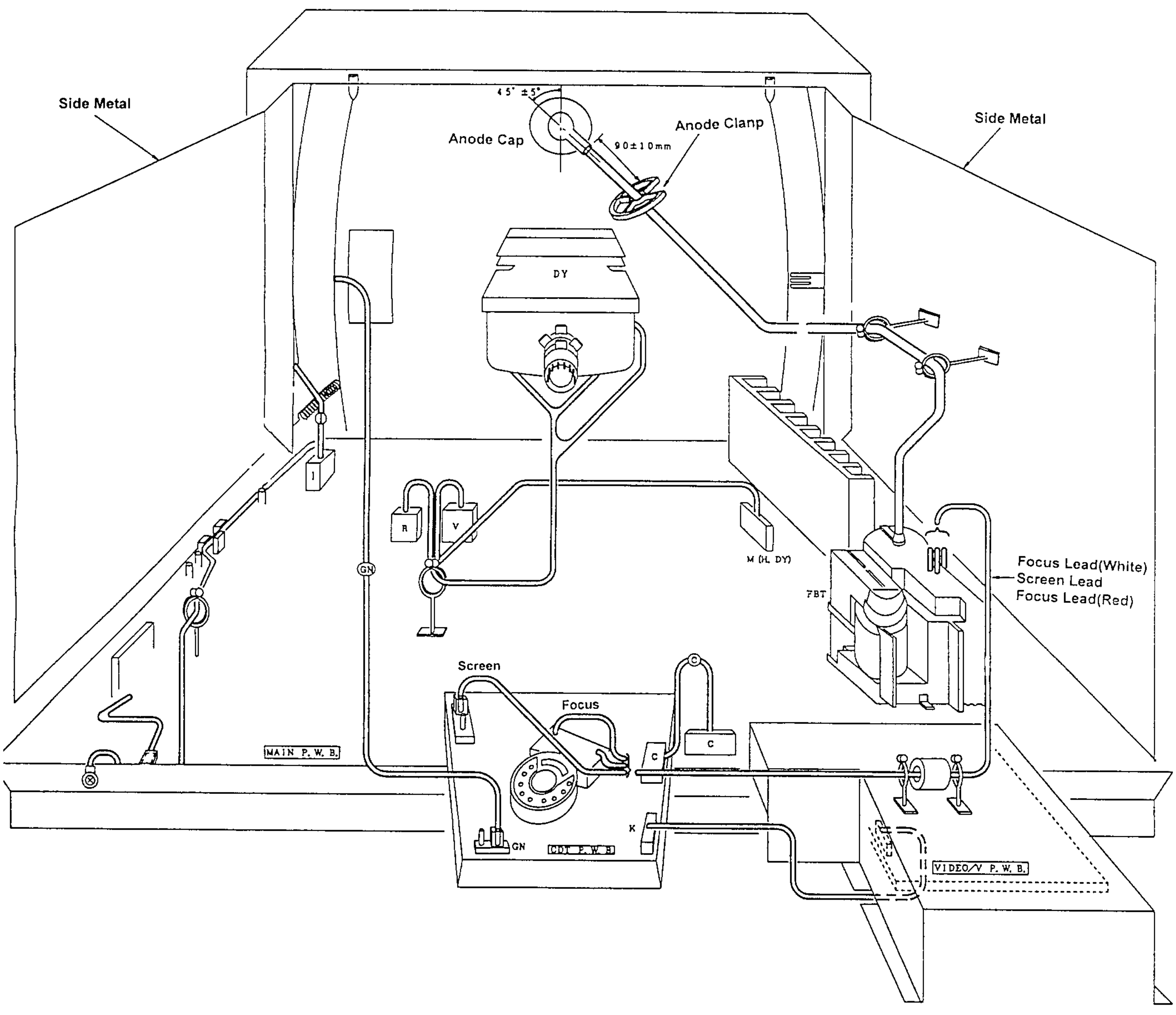
CPT P.W.B.



POWER SUB P.W.B.



WIRING DIAGRAM



REPLACEMENT PARTS LIST

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ABBREVIATIONS	Capacitors·········CD:Ceramic Disk, PF:Polyester Film, EL:Electrolytic, PP:Polypropylene, PR:Paper, TA:Tantalum, TM:Trimer. Resistors··········CF:Carbon film, WW:Wire Would, FR:Fuse Resistor, MG:Metal Glazzed, VR:Variable resistor, CC:Carbon Composition, MF:Metal Oxide Film. Semiconductors····TR:Transistor, DI:Diode, ZD:Zener Diode, VA:Varistor, TH:Thermistor

SYMBOL NO.	PART NO.	DESCRIPTION	SYMBOL NO.	PART NO.	DESCRIPTION
C00A	0800366N	EL 2200MF 10V	C055	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V
C001	0244171	CD 0.01MF +80-20% 50V	C056	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V
C002	0244171	CD 0.01MF +80-20% 50V	C057	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V
C003	0244171	CD 0.01MF +80-20% 50V	C058	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V
C004	0244171	CD 0.01MF +80-20% 50V	C059	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V
C005	0244171	CD 0.01MF +80-20% 50V	C060	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V
C006	0244171	CD 0.01MF +80-20% 50V	C061	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V
C007	0244171	CD 0.01MF +80-20% 50V	C062	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V
C008	0244171	CD 0.01MF +80-20% 50V	C063	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V
C009	0244171	CD 0.01MF +80-20% 50V	C064	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V
C010	0244171	CD 0.01MF +80-20% 50V	C065	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V
C011	0244171	CD 0.01MF +80-20% 50V	C066	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V
C012	0244171	CD 0.01MF +80-20% 50V	C067	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V
C013	0890035	CD 1000PF +-10% 50V	C068	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V
C014	0890032	CD 560PF +-10% 50V	C10P	0800003	EL 1MF 50V
C016	0244171	CD 0.01MF +80-20% 50V	C101	0890115R	CD 12PF +-5% 50V
C017	0244171	CD 0.01MF +80-20% 50V	C102	0890115R	CD 12PF +-5% 50V
C018	0890035	CD 1000PF +-10% 50V	C104	0880053	PF 0.047MF +-10% 50V
C019	0890032	CD 560PF +-10% 50V	C105	0880053	PF 0.047MF +-10% 50V
C020	0800048	EL 100MF 10V	C107	0880053	PF 0.047MF +-10% 50V
C021	0244171	CD 0.01MF +80-20% 50V	C111	0244171	CD 0.01MF +80-20% 50V
C022	0244171	CD 0.01MF +80-20% 50V	C112	0244171	CD 0.01MF +80-20% 50V
C023	0244171	CD 0.01MF +80-20% 50V	C113	0244171	CD 0.01MF +80-20% 50V
C024	0244171	CD 0.01MF +80-20% 50V	C114	0244171	CD 0.01MF +80-20% 50V
C025	0244171	CD 0.01MF +80-20% 50V	C115	0244171	CD 0.01MF +80-20% 50V
C027	0244171	CD 0.01MF +80-20% 50V	C116	0244171	CD 0.01MF +80-20% 50V
C028	0244171	CD 0.01MF +80-20% 50V	C117	0244171	CD 0.01MF +80-20% 50V
C030	0890035	CD 1000PF +-10% 50V	C118	0244171	CD 0.01MF +80-20% 50V
C031	0890035	CD 1000PF +-10% 50V	C119	0244171	CD 0.01MF +80-20% 50V
C032	0890035	CD 1000PF +-10% 50V	C120	0244171	CD 0.01MF +80-20% 50V
C033	0890035	CD 1000PF +-10% 50V	C121	0244171	CD 0.01MF +80-20% 50V
C034	0890035	CD 1000PF +-10% 50V	C124	0244171	CD 0.01MF +80-20% 50V
C035	0890035	CD 1000PF +-10% 50V	C125	0244171	CD 0.01MF +80-20% 50V
C036	0890035	CD 1000PF +-10% 50V	C130	0800039	EL 47MF 10V
C037	0890035	CD 1000PF +-10% 50V	C131	0244171	CD 0.01MF +80-20% 50V
C038	0890035	CD 1000PF +-10% 50V	C141	0880053	PF 0.047MF +-10% 50V
C039	0890035	CD 1000PF +-10% 50V	C142	0880053	PF 0.047MF +-10% 50V
C040	0890035	CD 1000PF +-10% 50V	C143	0880053	PF 0.047MF +-10% 50V
C041	0890035	CD 1000PF +-10% 50V	C144	0890087	CD 1000PF +-10% 50V
C045	0244171	CD 0.01MF +80-20% 50V	C145	0880195R	PF 0.12MF +-5% 50V
C046	0244171	CD 0.01MF +80-20% 50V	C171	0800007	EL 3.3MF 50V
C047	0244171	CD 0.01MF +80-20% 50V	C172	0800007	EL 3.3MF 50V
C048	0244171	CD 0.01MF +80-20% 50V	C173	0800007	EL 3.3MF 50V
C050	0244171	CD 0.01MF +80-20% 50V	C174	0800007	EL 3.3MF 50V
C051	0890022	CD 100PF +-10% 50V	C2AB	0228894R	CAPACITOR,CHIP 27PF 50V
C051	0893031R	CAPACITOR,CHIP 1000PF +-10% 50V	C2AG	0228894R	CAPACITOR,CHIP 27PF 50V
C052	0229006R	CAPACITOR,CHIP 560PF +-5% 50V	C2AR	0228894R	CAPACITOR,CHIP 27PF 50V
C052	0890005	CD 4.7PF +-10% 50V	C2BB	0258125	EL 22 MF 100V
C053	0800048	EL 100MF 10V	C2BG	0258125	EL 22 MF 100V

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SYMBOL NO.	PART NO.	DESCRIPTION	SYMBOL NO.	PART NO.	DESCRIPTION
C2BR	0258125	EL 22 MF 100V	C27R	0893067R	CD 0.1MF +80 -20% 250V
C2DB	0258119R	EL 0.47MF 100V	C271	0893031R	CAPACITOR,CHIP 1000PF +-10% 50V
C2DG	0258119R	EL 0.47MF 100V	C272	0893031R	CAPACITOR,CHIP 1000PF +-10% 50V
C2DR	0258119R	EL 0.47MF 100V	C274	0244505	CD 2200PF +-10% 500V
C2EB	0258124R	EL 10MF 100V	C275	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V
C2EG	0258124R	EL 10MF 100V	C276	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V
C2ER	0258124R	EL 10MF 100V	C28B	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V
C2F1	0800353	EL 470MF 16V	C28G	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V
C2GB	0893067R	CD 0.1MF +80 -20% 250V	C28R	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V
C2GG	0893027R	CAPACITOR,CHIP 0.1MF 25V	C281	0800353	EL 470MF 16V
C2GR	0893027R	CAPACITOR,CHIP 0.1MF 25V	C282	0800326	EL 100MF 16V
C2H1	0800353	EL 470MF 16V	C29B	0228738R	CAPACITOR,CHIP 22PF +-5% 50V
C2JB	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V	C29G	0228738R	CAPACITOR,CHIP 22PF +-5% 50V
C2JG	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V	C29R	0228738R	CAPACITOR,CHIP 22PF +-5% 50V
C2JR	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V	C301	0893067R	CD 0.1MF +80 -20% 250V
C2KB	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V	C302	0800057	EL 220MF 10V
C2KG	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V	C303	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V
C2KR	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V	C304	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V
C2LB	0893027R	CAPACITOR,CHIP 0.1MF 25V	C305	0880039	PF 4700PF +-10% 50V
C2LG	0893027R	CAPACITOR,CHIP 0.1MF 25V	C306	0880057	PF 0.1MF +-10% 50V
C2LR	0893027R	CAPACITOR,CHIP 0.1MF 25V	C308	0880055	PF 0.068MF +-10% 50V
C2TB	0247854	CD 100PF +-5% 500V	C309	0800018	EL 10MF 50V
C2TG	0247854	CD 100PF +-5% 500V	C310	0800048	EL 100MF 10V
C2TR	0247854	CD 100PF +-5% 500V	C311	0893067R	CD 0.1MF +80 -20% 250V
C20B	0246426	CD 6PF +-0.5% 50V	C313	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V
C20G	0246415	CD 5PF +-0.25PF 50V	C315	0228754R	CAPACITOR,CHIP 100PF +-5% 50V
C20R	0246427	CD 7PF +-0.5% 50V	C316	0800012	EL 4.7MF 50V
C21B	0284621R	EL 0.47MF 50V	C317	0800012	EL 4.7MF 50V
C21G	0284621R	EL 0.47MF 50V	C319	0229001R	CAPACITOR,CHIP 220PF +-10% 50V
C21R	0284621R	EL 0.47MF 50V	C321	0880043	PF 8200PF 50V +-10%
C210	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V	C322	0800003	EL 1MF 50V
C211	0800326	EL 100MF 16V	C323	0800039	EL 47MF 10V
C212	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V	C325	0800003	EL 1MF 50V
C221	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V	C327	0800007	EL 3.3MF 50V
C222	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V	C341	0893031R	CAPACITOR,CHIP 1000PF +-10% 50V
C223	0284638	EL 10MF 16V	C360	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V
C224	0893027R	CAPACITOR,CHIP 0.1MF 25V	C361	0800039	EL 47MF 10V
C240	0258128	EL 100MF +-20% 100V	C381	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V
C241	0800041	EL 47MF 16V	C382	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V
C242	0800003	EL 1MF 50V	C383	0893031R	CAPACITOR,CHIP 1000PF +-10% 50V
C25B	0893072R	CD 0.47MF +80-20% 250V	C385	0228754R	CAPACITOR,CHIP 100PF +-5% 50V
C25G	0893072R	CD 0.47MF +80-20% 250V	C386	0893031R	CAPACITOR,CHIP 1000PF +-10% 50V
C25K	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V	C401	0890035	CD 1000PF +-10% 50V
C25R	0893072R	CD 0.47MF +80-20% 250V	C402	0890035	CD 1000PF +-10% 50V
C251	0893067R	CD 0.1MF +80 -20% 250V	C403	0284638	EL 10MF 16V
C252	0800334R	EL 220MF 10V	C404	0244171	CD 0.01MF +80-20% 50V
C253	0800055	EL 100MF 100V	C50A	0800018	EL 10MF 50V
C254	0800041	EL 47MF 16V	C50B	0800018	EL 10MF 50V
C256	0800028	EL 22MF 100V	C501	0244171	CD 0.01MF +80-20% 50V
C26B	0800007	EL 3.3MF 50V	C502	0880033	PF 1500PF +-10% 50V
C26G	0800007	EL 3.3MF 50V	C503	0800003	EL 1MF 50V
C26R	0800007	EL 3.3MF 50V	C504	0890022	CD 100PF +-10% 50V
C261	0893044R	CAPACITOR,CHIP 0.01MF +-10% 50V	C505	0880051	PF 0.033MF +-10% 50V
C262	0284667R	EL 47MF 16V	C507	0800048	EL 100MF 10V
C27B	0893067R	CD 0.1MF +80 -20% 250V	C53A	0800018	EL 10MF 50V
C27G	0893067R	CD 0.1MF +80 -20% 250V	C53B	0800018	EL 10MF 50V

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SYMBOL NO.	PART NO.	DESCRIPTION	SYMBOL NO.	PART NO.	DESCRIPTION
C531	0800005	EL 2.2MF 50V	C70G	0800018	EL 10MF 50V
C532	0800018	EL 10MF 50V	C70H	0890031	CD 470PF +-10% 50V
C533	0800018	EL 10MF 50V	C702	0880194R	PF 0.1MF +-5% 50V
C534	0800003	EL 1MF 50V	C703	0236389R	CD 470PF +-5% 50V
C540	0244171	CD 0.01MF +80-20% 50V	C704	0890034	CD 820PF +-10% 50V
C541	0244171	CD 0.01MF +80-20% 50V	C705	0800005	EL 2.2MF 50V
C542	0244171	CD 0.01MF +80-20% 50V	C706	0800018	EL 10MF 50V
C543	0236381R	CD 100PF +-5% 50V	C707	0800018	EL 10MF 50V
C544	0236381R	CD 100PF +-5% 50V	C708	0880037	PF 3300PF +-10% 50V
C545	0800032	EL 33MF 16V	C709	0800003	EL 1MF 50V
C546	0244171	CD 0.01MF +80-20% 50V	C71B	0800058	EL 220MF 16V
C547	0244171	CD 0.01MF +80-20% 50V	C71C	0890035	CD 1000PF +-10% 50V
C548	0800003	EL 1MF 50V	C71D	0890022	CD 100PF +-10% 50V
C549	0890017	CD 47PF 50V +-5%	C71E	0890035	CD 1000PF +-10% 50V
C550	0244171	CD 0.01MF +80-20% 50V	C71F	0890022	CD 100PF +-10% 50V
C551	0800032	EL 33MF 16V	C710	0880046	PF 0.015MF +-10% 50V
C552	0800012	EL 4.7MF 50V	C711	0800048	EL 100MF 10V
C553	0800001	EL 0.47MF 50V	C712	0800352	EL 470MF 10V
C561	0800018	EL 10MF 50V	C713	0800082	EL 1000MF 16V
C562	0247846	CD 47PF +-5% 500V	C714	0244171	CD 0.01MF +80-20% 50V
C563	0890085	CD 680PF +-10% 50V	C715	0800018	EL 10MF 50V
C564	0890085	CD 680PF +-10% 50V	C717	0800003	EL 1MF 50V
C565	0255013R	EL 4.7MF 63V	C718	0800023	EL 22MF 16V
C571	0800048	EL 100MF 10V	C719	0890035	CD 1000PF +-10% 50V
C579	0299939F	PP 0.012 MF 1600V	C720	0890022	CD 100PF +-10% 50V
C601	0244171	CD 0.01MF +80-20% 50V	C721	0244171	CD 0.01MF +80-20% 50V
C602	0244171	CD 0.01MF +80-20% 50V	C740	0890035	CD 1000PF +-10% 50V
C603	0244171	CD 0.01MF +80-20% 50V	C741	0800326	EL 100MF 16V
C604	0800003	EL 1MF 50V	C742	0800351	EL 470MF 6.3V
C605	0244171	CD 0.01MF +80-20% 50V	C744	0244206	CD 330PF +-10% 2KV
C606	0880201R	PF 0.33MF +-5% 50V	C745	AN00411F	PP 1000PF +-5% 1.2KV
C607	0800041	EL 47MF 16V	C746	AN00414F	PP 1300PF +-5% 1.2KV
C608	0800049	EL 100MF 16V	C747	AN00411F	PP 1000PF +-5% 1.2KV
C609	0244171	CD 0.01MF +80-20% 50V	C748	0299933	PP 0.39MF +-10% 200V
C610	0244171	CD 0.01MF +80-20% 50V	C750	0284241F	EL 1MF 200V
C611	0244171	CD 0.01MF +80-20% 50V	C751	0890035	CD 1000PF +-10% 50V
C612	0800018	EL 10MF 50V	C752	0890031	CD 470PF +-10% 50V
C620	0800018	EL 10MF 50V	C754	0800018	EL 10MF 50V
C630	0880059	PF 0.15MF 50V	C755	0258124R	EL 10MF 100V
C631	0880057	PF 0.1MF +-10% 50V	C756	0800003	EL 1MF 50V
C632	0254516	EL 22MF 25V	C757	0800012	EL 4.7MF 50V
C634	0800363	EL 1000MF 35V	C758	0800005	EL 2.2MF 50V
C635	0800328	EL 100MF 35V	C76B	0800003	EL 1MF 50V
C636	0880044	PF 0.01MF +-10% 50V	C760	0880053	PF 0.047MF +-10% 50V
C637	0255011F	EL 2200MF 31.5V	C761	0880053	PF 0.047MF +-10% 50V
C638	0800287R	EL 4.7MF 35V	C763	0255003R	EL 22MF 31.5V
C639	0244171	CD 0.01MF +80-20% 50V	C764	0262415F	PP 3600PF +-5% 1.8KV
C640	0800003	EL 1MF 50V	C77A	0244206	CD 330PF +-10% 2KV
C641	0800018	EL 10MF 50V	C77B	0244206	CD 330PF +-10% 2KV
C645	0800018	EL 10MF 50V	C77C	0245608	CD 1000PF +-10% 1000V
C651	0890022	CD 100PF +-10% 50V	C770	0247842	CD 33PF +-5% 500V
C70A	0880044	PF 0.01MF +-10% 50V	C771	AN00492F	PP 0.27MF +-5% 400V
C70C	0800018	EL 10MF 50V	C773	0262785F	PP 0.15MF +-5% 200V
C70D	0800003	EL 1MF 50V	C774	0262791F	PP 0.24MF +-5% 200V
C70E	0800048	EL 100MF 10V	C775	0262796F	PP 0.39MF +-5% 200V
C70F	0800005	EL 2.2MF 50V	C776	0262801F	PP 0.56MF +-5% 200V

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C777	0262805F	PP 0.82MF +-5% 200V	C941	0244505	CD 2200PF +-10% 500V
C781	0244505	CD 2200PF +-10% 500V	C942	0800039	EL 47MF 10V
C782	0244505	CD 2200PF +-10% 500V	C943	0800051	EL 100MF 25V
C79A	0245610	CD 2200PF +-10% 1KV	C944	0244171	CD 0.01MF +80-20% 50V
C801	0800296R	EL 10MF 100V	C945	0890035	CD 1000PF +-10% 50V
C802	0800296R	EL 10MF 100V	C970	0245601R	PP 100PF +-10% 1KV
C803	0880035	PF 2200PF +-10% 50V	C971	AL00071	EL 470MF 200V
C820	AL00017R	EL 22MF 200V	C972	AL00021R	EL 100MF 200V
C822	0800074	EL 470MF 16V	C973	0243510	CD 560PF +-10% 500V
C840	0880181R	PF	C974	0800041	EL 47MF 16V
C850	0245611	CD 3300PF +-10% 1KV	C975	0800041	EL 47MF 16V
C851	0244171	CD 0.01MF +80-20% 50V	C976	0800018	EL 10MF 50V
C853	0245604R	PP 330PF +-10% 1KV	C977	0244107	CD 3300PF +-10% 50V
C854	0244505	CD 2200PF +-10% 500V	C978	0880051	PF 0.033MF +-10% 50V
C870	0800326	EL 100MF 16V	C98A	0247854	CD 100PF +-5% 500V
C871	0800326	EL 100MF 16V	C98B	0244505	CD 2200PF +-10% 500V
C872	0890035	CD 1000PF +-10% 50V	C98C	0244507	CD 3300PF +-10% 500V
C873	0890035	CD 1000PF +-10% 50V	C98E	0244501	CD 1000PF +-10% 500V
C90A	0800001	EL 0.47MF 50V	C98F	0245601R	PP 100PF +-10% 1KV
C901	0262773	PP 0.1MF +-20% 250V	⚠ C981	0258128N	EL 100MF 100V
⚠ C903	AN00153S	PF 0.47MF +-20% 250V	C982	0255010	EL 1000MF +-20% 31.5V
⚠ C904	AN00153S	PF 0.47MF +-20% 250V	C983	0254509	EL 1000MF 16V
⚠ C906	AJ00273F	CD 4700PF +-10% 250V	C984	0254020R	CE 470MF 10V
⚠ C907	AJ00273F	CD 4700PF +-10% 250V	C985	0254506	EL 220MF +-20% 16V
⚠ C908	AJ00273F	CD 4700PF +-10% 250V	C986	0800328	EL 100MF 35V
⚠ C909	AJ00273F	CD 4700PF +-10% 250V	C987	0800326	EL 100MF 16V
C91A	0880048	PF 0.022MF +-10% 50V	C988	0800353	EL 470MF 16V
C910	AN00153S	PF 0.47MF +-20% 250V	C989	0800351	EL 470MF 6.3V
⚠ C911	AL00801	EL 220MF 450V	C991	0800371N	EL 3300MF 10V
C912	0800051	EL 100MF 25V	C992	0800048	EL 100MF 10V
C913	0800003	EL 1MF 50V	C998	0800041	EL 47MF 16V
C914	0890019	CD 68PF +-5% 50V	C999	0800335R	EL 220MF 16V
⚠ C915	0236394R	CD 0.001MF +-5% 50V	R001	0700054	CF 10K OHM +-5% 1/16W
C916	0244102	CD 1200PF +-10% 50V	R002	0700046	CF 2.7K OHM +-5% 1/16W
C917	0890023	CD 120PF +-10% 50V	R003	0700054	CF 10K OHM +-5% 1/16W
C918	0890035	CD 1000PF +-10% 50V	R004	0700054	CF 10K OHM +-5% 1/16W
C919	0880195R	PF 0.12MF +-5% 50V	R005	0700046	CF 2.7K OHM +-5% 1/16W
C92A	0890035	CD 1000PF +-10% 50V	R006	0700054	CF 10K OHM +-5% 1/16W
C92B	0880044	PF 0.01MF +-10% 50V	R007	0700041	CF 1K OHM +-5% 1/16W
C920	0244507	CD 3300PF +-10% 500V	R030	0700041	CF 1K OHM +-5% 1/16W
C921	0800336R	EL 220MF 25V	R031	0700041	CF 1K OHM +-5% 1/16W
C922	0800003	EL 1MF 50V	R032	0700041	CF 1K OHM +-5% 1/16W
⚠ C923	AJ00023R	CD 820PF +-2% 50V	R033	0700041	CF 1K OHM +-5% 1/16W
C924	0244107	CD 3300PF +-10% 50V	R034	0700041	CF 1K OHM +-5% 1/16W
C925	0890031	CD 470PF +-10% 50V	R035	0700041	CF 1K OHM +-5% 1/16W
C926	0800018	EL 10MF 50V	R036	0700041	CF 1K OHM +-5% 1/16W
C928	0244171	CD 0.01MF +80-20% 50V	R037	0700041	CF 1K OHM +-5% 1/16W
C93A	0880053	PF 0.047MF +-10% 50V	R038	0700041	CF 1K OHM +-5% 1/16W
C930	0244505	CD 2200PF +-10% 500V	R039	0700041	CF 1K OHM +-5% 1/16W
C931	0800003	EL 1MF 50V	R040	0700041	CF 1K OHM +-5% 1/16W
C933	0800001	EL 0.47MF 50V	R049	0700027	CF 100 OHM +-5% 1/16W
⚠ C934	AJ00023R	CD 820PF +-2% 50V	R051	0195925R	RESISTOR,CHIP 10K OHM +-5% 1/10W
C935	0244107	CD 3300PF +-10% 50V	R052	0195910R	RESISTOR,CHIP 2.7K OHM +-5% 1/10W
C936	0880046	PF 0.015MF +-10% 50V	R053	0195922R	RESISTOR,CHIP 8.2K OHM +-5% 1/10W
C938	0244171	CD 0.01MF +80-20% 50V	R055	0195891R	RESISTOR,CHIP 470 OHM +-5% 1/10W
C939	0244171	CD 0.01MF +80-20% 50V	R056	0195875R	RESISTOR,CHIP 100 OHM +-5% 1/10W

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R057	0195875R	RESISTOR,CHIP 100 OHM +-5% 1/10W	R189	0700027	CF 100 OHM +-5% 1/16W
R10P	0700063	CF 47K OHM +-5% 1/16W	R191	0700027	CF 100 OHM +-5% 1/16W
R109	0700049	CF 4.7K OHM +-5% 1/16W	R192	0700049	CF 4.7K OHM +-5% 1/16W
R110	0700049	CF 4.7K OHM +-5% 1/16W	R194	0700027	CF 100 OHM +-5% 1/16W
R111	0700027	CF 100 OHM +-5% 1/16W	R195	0700054	CF 10K OHM +-5% 1/16W
R112	0700027	CF 100 OHM +-5% 1/16W	R198	0700049	CF 4.7K OHM +-5% 1/16W
R113	0700027	CF 100 OHM +-5% 1/16W	R2AB	0700027	CF 100 OHM +-5% 1/16W
R114	0700027	CF 100 OHM +-5% 1/16W	R2AG	0700027	CF 100 OHM +-5% 1/16W
R115	0700027	CF 100 OHM +-5% 1/16W	R2AR	0700027	CF 100 OHM +-5% 1/16W
R116	0700027	CF 100 OHM +-5% 1/16W	R2BB	0195947R	RESISTOR,CHIP 82K OHM +-5% 1/10W
R117	0700027	CF 100 OHM +-5% 1/16W	R2BG	0195947R	RESISTOR,CHIP 82K OHM +-5% 1/10W
R118	0700027	CF 100 OHM +-5% 1/16W	R2BR	0195947R	RESISTOR,CHIP 82K OHM +-5% 1/10W
R119	0700027	CF 100 OHM +-5% 1/16W	R2CB	0700041	CF 1K OHM +-5% 1/16W
R120	0700027	CF 100 OHM +-5% 1/16W	R2CG	0700041	CF 1K OHM +-5% 1/16W
R121	0700027	CF 100 OHM +-5% 1/16W	R2CR	0700041	CF 1K OHM +-5% 1/16W
R124	0700054	CF 10K OHM +-5% 1/16W	R2DB	0100121	CF 220K OHM +-5% 1/8W
R125	0700054	CF 10K OHM +-5% 1/16W	R2DG	0100121	CF 220K OHM +-5% 1/8W
R126	0700049	CF 4.7K OHM +-5% 1/16W	R2DR	0100121	CF 220K OHM +-5% 1/8W
R127	0700049	CF 4.7K OHM +-5% 1/16W	R2EB	0100047	CF 180 OHM +-5% 1/8W
R13A	0700027	CF 100 OHM +-5% 1/16W	R2EG	0100047	CF 180 OHM +-5% 1/8W
R131	0700027	CF 100 OHM +-5% 1/16W	R2ER	0100047	CF 180 OHM +-5% 1/8W
R132	0700027	CF 100 OHM +-5% 1/16W	R2FB	0195938R	RESISTOR,CHIP 36K OHM+-5% 1/16W
R133	0700027	CF 100 OHM +-5% 1/16W	R2FG	0195937R	RESISTOR,CHIP 33K OHM +-5% 1/10W
R134	0700027	CF 100 OHM +-5% 1/16W	R2FR	0195936R	RESISTOR,CHIP 30K OHM +-5% 1/16W
R135	0700027	CF 100 OHM +-5% 1/16W	R2GB	0100019	CF 12 OHM +-5% 1/8W
R139	0700027	CF 100 OHM +-5% 1/16W	R2GG	0100019	CF 12 OHM +-5% 1/8W
R140	0700027	CF 100 OHM +-5% 1/16W	R2GR	0100019	CF 12 OHM +-5% 1/8W
R141	0700054	CF 10K OHM +-5% 1/16W	R2HB	0100111	CF 82K OHM +-5% 1/8W
R142	0700054	CF 10K OHM +-5% 1/16W	R2HG	0100111	CF 82K OHM +-5% 1/8W
R144	0700027	CF 100 OHM +-5% 1/16W	R2HR	0100111	CF 82K OHM +-5% 1/8W
R145	0700027	CF 100 OHM +-5% 1/16W	R2KB	0188122M	CF 220 OHM +-5% 1/2W
R146	0700027	CF 100 OHM +-5% 1/16W	R2KG	0188122M	CF 220 OHM +-5% 1/2W
R147	0700027	CF 100 OHM +-5% 1/16W	R2KR	0188122M	CF 220 OHM +-5% 1/2W
R148	0700045	CF 2.2K OHM +-5% 1/16W	R2PB	0195922R	RESISTOR,CHIP 8.2K OHM +-5% 1/10W
R149	0700041	CF 1K OHM +-5% 1/16W	R2PG	0195922R	RESISTOR,CHIP 8.2K OHM +-5% 1/10W
R150	0700027	CF 100 OHM +-5% 1/16W	R2PR	0195922R	RESISTOR,CHIP 8.2K OHM +-5% 1/10W
R157	0700054	CF 10K OHM +-5% 1/16W	R2QB	0195910R	RESISTOR,CHIP 2.7K OHM +-5% 1/10W
R158	0700049	CF 4.7K OHM +-5% 1/16W	R2QG	0195910R	RESISTOR,CHIP 2.7K OHM +-5% 1/10W
R159	0700036	CF 470 OHM +-5% 1/16W	R2QR	0195910R	RESISTOR,CHIP 2.7K OHM +-5% 1/10W
R160	0700036	CF 470 OHM +-5% 1/16W	R2RB	0195925R	RESISTOR,CHIP 10K OHM +-5% 1/10W
R162	0700049	CF 4.7K OHM +-5% 1/16W	R2RG	0195910R	RESISTOR,CHIP 2.7K OHM +-5% 1/10W
R168	0700049	CF 4.7K OHM +-5% 1/16W	R2RR	0195910R	RESISTOR,CHIP 2.7K OHM +-5% 1/10W
R169	0700049	CF 4.7K OHM +-5% 1/16W	R2SB	0188164M	CF 330K OHM +-5% 1/2W
R171	0700027	CF 100 OHM +-5% 1/16W	R2SG	0188164M	CF 330K OHM +-5% 1/2W
R172	0700027	CF 100 OHM +-5% 1/16W	R2SR	0188164M	CF 330K OHM +-5% 1/2W
R173	0700027	CF 100 OHM +-5% 1/16W	R2TB	0195879R	RESISTOR,CHIP 150 OHM +-5% 1/10W
R174	0700027	CF 100 OHM +-5% 1/16W	R2TG	0195879R	RESISTOR,CHIP 150 OHM +-5% 1/10W
R175	0700027	CF 100 OHM +-5% 1/16W	R2TR	0195879R	RESISTOR,CHIP 150 OHM +-5% 1/10W
R180	0700049	CF 4.7K OHM +-5% 1/16W	R21B	0188921M	CF 750OHM +-2% 1/8W
R181	0700027	CF 100 OHM +-5% 1/16W	R21G	0188921M	CF 750OHM +-2% 1/8W
R182	0700027	CF 100 OHM +-5% 1/16W	R21R	0188921M	CF 750OHM +-2% 1/8W
R183	0700027	CF 100 OHM +-5% 1/16W	R22B	0195250R	RESISTOR,CHIP 0 OHM 1/16W
R185	0700027	CF 100 OHM +-5% 1/16W	R22G	0195250R	RESISTOR,CHIP 0 OHM 1/16W
R186	0700027	CF 100 OHM +-5% 1/16W	R22R	0195250R	RESISTOR,CHIP 0 OHM 1/16W
R187	0700027	CF 100 OHM +-5% 1/16W	R24B	0195935R	RESISTOR,CHIP 27K OHM +-5% 1/10W
R188	0700049	CF 4.7K OHM +-5% 1/16W	R24G	0195935R	RESISTOR,CHIP 27K OHM +-5% 1/10W

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R24R	0195935R	RESISTOR,CHIP 27K OHM +-5% 1/10W	R348	0195875R	RESISTOR,CHIP 100 OHM +-5% 1/10W
R241	0195902R	RESISTOR,CHIP 1.2K OHM +-5% 1/10W	R350	0195875R	RESISTOR,CHIP 100 OHM +-5% 1/10W
R242	0195900R	RESISTOR,CHIP 1K OHM +-5% 1/10W	R351	0195904R	RESISTOR,CHIP 1.5K OHM +-5% 1/10W
R243	0195947R	RESISTOR,CHIP 82K OHM +-5% 1/10W	R352	0195891R	RESISTOR,CHIP 470 OHM +-5% 1/10W
R244	0195912R	RESISTOR,CHIP 3.3K OHM +-5% 1/10W	R361	0195941R	RESISTOR,CHIP 47K OHM +-5% 1/10W
R251	0195941R	RESISTOR,CHIP 47K OHM +-5% 1/10W	R363	0195868R	RESISTOR,CHIP 56 OHM +-5% 1/10W
R252	0195900R	RESISTOR,CHIP 1K OHM +-5% 1/10W	R364	0195868R	RESISTOR,CHIP 56 OHM +-5% 1/10W
R253	0195875R	RESISTOR,CHIP 100 OHM +-5% 1/10W	R365	0195868R	RESISTOR,CHIP 56 OHM +-5% 1/10W
R254	0195939R	RESISTOR,CHIP 39K OHM +-5% 1/10W	R381	0195925R	RESISTOR,CHIP 10K OHM +-5% 1/10W
R255	0195900R	RESISTOR,CHIP 1K OHM +-5% 1/10W	R383	0100123	CF 270K OHM +-5% 1/8W
R256	0195900R	RESISTOR,CHIP 1K OHM +-5% 1/10W	R384	0195909R	RESISTOR,CHIP 2.4K OHM 1/16W
R257	0195922R	RESISTOR,CHIP 8.2K OHM +-5% 1/10W	R401	0100065	CF 1K OHM +-5% 1/8W
R258	0195866R	RESISTOR,CHIP 47 OHM +-5% 1/16W	R402	0187088	CF 9.1K OHM +-5% 1/16W
R259	0195891R	RESISTOR,CHIP 470 OHM +-5% 1/10W	R403	0110123	MF 120 OHM +-5% 1W
R266	0195947R	RESISTOR,CHIP 82K OHM +-5% 1/10W	R404	0700047	CF 3.3K OHM +-5% 1/16W
R267	0195929R	RESISTOR,CHIP 15K OHM +-5% 1/10W	R405	0700046	CF 2.7K OHM +-5% 1/16W
R27B	0195887R	RESISTOR,CHIP 330 OHM +-5% 1/10W	R406	0700059	CF 27K OHM +-5% 1/16W
R27G	0195887R	RESISTOR,CHIP 330 OHM +-5% 1/10W	R500	0100041	CF 100 OHM +-5% 1/8W
R27R	0195887R	RESISTOR,CHIP 330 OHM +-5% 1/10W	R501	0700044	CF 1.8K OHM +-5% 1/16W
R271	0195943R	RESISTOR,CHIP 56K OHM +-5% 1/10W	R502	0100128	CF 430K OHM +-5% 1/8W
R272	0195945R	RESISTOR,CHIP 68K OHM +-5% 1/10W	R503	0700054	CF 10K OHM +-5% 1/16W
R273	0195937R	RESISTOR,CHIP 33K OHM +-5% 1/10W	R504	0700043	CF 1.5K OHM +-5% 1/16W
R274	0195922R	RESISTOR,CHIP 8.2K OHM +-5% 1/10W	R505	0150304	VR 5K OHM
R275	0195912R	RESISTOR,CHIP 3.3K OHM +-5% 1/10W	R506	0700027	CF 100 OHM +-5% 1/16W
R276	0195925R	RESISTOR,CHIP 10K OHM +-5% 1/10W	R507	0113729	CF 150 OHM +-5% 1/2W
R277	0195927R	RESISTOR,CHIP 12K OHM +-5% 1/10W	R521	0700062	CF 39K OHM +-5% 1/16W
R278	0195933R	RESISTOR,CHIP 22K OHM +-5% 1/10W	R522	0187086	CF 7.5K OHM +-5% 1/16W
R279	0195922R	RESISTOR,CHIP 8.2K OHM +-5% 1/10W	R523	0700048	CF 3.9K OHM +-5% 1/16W
R28B	0195879R	RESISTOR,CHIP 150 OHM +-5% 1/10W	R524	0700054	CF 10K OHM +-5% 1/16W
R28G	0195879R	RESISTOR,CHIP 150 OHM +-5% 1/10W	R525	0700054	CF 10K OHM +-5% 1/16W
R28R	0195879R	RESISTOR,CHIP 150 OHM +-5% 1/10W	R527	0700051	CF 5.6K OHM +-5% 1/16W
R280	0195914R	RESISTOR,CHIP 3.9K OHM +-5% 1/10W	R528	0700049	CF 4.7K OHM +-5% 1/16W
R281	0195937R	RESISTOR,CHIP 33K OHM +-5% 1/10W	R529	0700054	CF 10K OHM +-5% 1/16W
R282	0195920R	RESISTOR,CHIP 6.8K OHM +-5% 1/10W	R530	0700038	CF 680 OHM +-5% 1/16W
R283	0195943R	RESISTOR,CHIP 56K OHM +-5% 1/10W	R531	0700041	CF 1K OHM +-5% 1/16W
R284	0195943R	RESISTOR,CHIP 56K OHM +-5% 1/10W	R532	0700044	CF 1.8K OHM +-5% 1/16W
R285	0195937R	RESISTOR,CHIP 33K OHM +-5% 1/10W	R533	0700044	CF 1.8K OHM +-5% 1/16W
R286	0195929R	RESISTOR,CHIP 15K OHM +-5% 1/10W	R540	0700057	CF 18K OHM +-5% 1/16W
R29B	AT00514S	MF 680 OHM +-5% 2W	R541	0187086	CF 7.5K OHM +-5% 1/16W
R29G	AT00514S	MF 680 OHM +-5% 2W	R542	0700052	CF 6.8K OHM +-5% 1/16W
R29R	AT00514S	MF 680 OHM +-5% 2W	R543	0150302	VR 2K OHM B
R30B	0195891R	RESISTOR,CHIP 470 OHM +-5% 1/10W	R544	0150302	VR 2K OHM B
R30G	0195891R	RESISTOR,CHIP 470 OHM +-5% 1/10W	R545	0700052	CF 6.8K OHM +-5% 1/16W
R30R	0195891R	RESISTOR,CHIP 470 OHM +-5% 1/10W	R546	0700052	CF 6.8K OHM +-5% 1/16W
R301	0195909R	RESISTOR,CHIP 2.4K OHM 1/16W	R547	0700054	CF 10K OHM +-5% 1/16W
R308	0195872R	RESISTOR,CHIP 82 OHM +-5% 1/10W	R548	0700055	CF 12K OHM +-5% 1/16W
R311	0195941R	RESISTOR,CHIP 47K OHM +-5% 1/10W	R549	0700047	CF 3.3K OHM +-5% 1/16W
R312	0195942R	RESISTOR,CHIP 51K OHM+-5% 1/16W	R55A	0700054	CF 10K OHM +-5% 1/16W
R320	0195918R	RESISTOR,CHIP 5.6K OHM +-5% 1/10W	R55B	0700054	CF 10K OHM +-5% 1/16W
R332	0195947R	RESISTOR,CHIP 82K OHM +-5% 1/10W	R55C	0700067	CF 100K OHM +-5% 1/16W
R333	0195947R	RESISTOR,CHIP 82K OHM +-5% 1/10W	R550	0700058	CF 22K OHM +-5% 1/16W
R341	0195900R	RESISTOR,CHIP 1K OHM +-5% 1/10W	R551	0700053	CF 8.2K OHM +-5% 1/16W
R343	0100073	CF 2.2K OHM +-5% 1/8W	R552	0700054	CF 10K OHM +-5% 1/16W
R345	0195908R	RESISTOR,CHIP 2.2K OHM +-5% 1/10W	R556	0700041	CF 1K OHM +-5% 1/16W
R346	0195904R	RESISTOR,CHIP 1.5K OHM +-5% 1/10W	R557	0700043	CF 1.5K OHM +-5% 1/16W
R347	0195891R	RESISTOR,CHIP 470 OHM +-5% 1/10W	R558	0700055	CF 12K OHM +-5% 1/16W

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R559	0700054	CF 10K OHM +-5% 1/16W	R628	0700047	CF 3.3K OHM +-5% 1/16W
R561	0113769	CF 6.2K OHM +-5% 1/2W	R629	0187088	CF 9.1K OHM +-5% 1/16W
R562	0700043	CF 1.5K OHM +-5% 1/16W	R630	0113729	CF 150 OHM +-5% 1/2W
R563	AT00569S	MF 82K OHM +-5% 2W	R631	01195051	FR 2.2 OHM +-5% 1/4W
R564	AT00567S	MF 68K OHM +-5% 2W	R632	AT00496S	MF 150 OHM +-5% 2W
R565	AT00569S	MF 82K OHM +-5% 2W	R633	0700048	CF 3.9K OHM +-5% 1/16W
R566	AT00567S	MF 68K OHM +-5% 2W	R634	0187094	CF 16K OHM +-5% 1/16W
R567	0114210	CF 24K OHM +-5% 1/4W	R635	0187094	CF 16K OHM +-5% 1/16W
R57A	0188124M	CF 330 OHM +-5% 1/2W	R636	AT00438S	MF 1 OHM +-5% 2W
R570	0113784	CF 24K OHM +-5% 1/2W	R637	0700056	CF 15K OHM +-5% 1/16W
R571	0113750	CF 1K OHM +-5% 1/2W	R638	0700054	CF 10K OHM +-5% 1/16W
R572	0100065	CF 1K OHM +-5% 1/8W	R639	0700041	CF 1K OHM +-5% 1/16W
R573	0140957M	MF 330K OHM +-5% 1/2W	R640	0700041	CF 1K OHM +-5% 1/16W
R574	0140957M	MF 330K OHM +-5% 1/2W	R641	0700064	CF 56K OHM +-5% 1/16W
R575	0140957M	MF 330K OHM +-5% 1/2W	R642	0700047	CF 3.3K OHM +-5% 1/16W
R576	0100113	CF 100K OHM +-5% 1/8W	R643	0700054	CF 10K OHM +-5% 1/16W
R577	0700051	CF 5.6K OHM +-5% 1/16W	R644	0700046	CF 2.7K OHM +-5% 1/16W
R578	0100107	CF 56K OHM +-5% 1/8W	R651	0700032	CF 220 OHM +-5% 1/16W
R579	0700065	CF 68K OHM +-5% 1/16W	R70A	0700049	CF 4.7K OHM +-5% 1/16W
R60A	0700054	CF 10K OHM +-5% 1/16W	R70B	0700063	CF 47K OHM +-5% 1/16W
R60B	0100115	CF 120K OHM +-5% 1/8W	R70C	0700063	CF 47K OHM +-5% 1/16W
R60C	0700041	CF 1K OHM +-5% 1/16W	R70D	0700054	CF 10K OHM +-5% 1/16W
R60D	0700054	CF 10K OHM +-5% 1/16W	R70E	0100061	CF 680 OHM +-5% 1/8W
R60E	0700054	CF 10K OHM +-5% 1/16W	R70F	0700052	CF 6.8K OHM +-5% 1/16W
R60F	0187108	CF 62K OHM +-5% 1/16W	R70G	0187078	CF 3.6K OHM +-5% 1/16W
R60G	0700047	CF 3.3K OHM +-5% 1/16W	R70H	0700041	CF 1K OHM +-5% 1/16W
R60H	0187090	CF 11K OHM +-5% 1/16W	R700	0700041	CF 1K OHM +-5% 1/16W
R60K	0187088	CF 9.1K OHM +-5% 1/16W	R704	0700045	CF 2.2K OHM +-5% 1/16W
R601	0700047	CF 3.3K OHM +-5% 1/16W	R705	0119613	MF 1.8K OHM +-1% 1/8W
R602	0700041	CF 1K OHM +-5% 1/16W	R706	0150283	VR 1K OHM-B
R603	0700041	CF 1K OHM +-5% 1/16W	R707	0700041	CF 1K OHM +-5% 1/16W
R604	0700055	CF 12K OHM +-5% 1/16W	R708	0700041	CF 1K OHM +-5% 1/16W
R605	0700059	CF 27K OHM +-5% 1/16W	R709	0700041	CF 1K OHM +-5% 1/16W
R606	0700053	CF 8.2K OHM +-5% 1/16W	R71A	0700041	CF 1K OHM +-5% 1/16W
R607	0187082	CF 5.1K OHM +-5% 1/16W	R71B	0700049	CF 4.7K OHM +-5% 1/16W
R608	0700047	CF 3.3K OHM +-5% 1/16W	R710	0700054	CF 10K OHM +-5% 1/16W
R609	0700063	CF 47K OHM +-5% 1/16W	R711	0700053	CF 8.2K OHM +-5% 1/16W
R61A	0700045	CF 2.2K OHM +-5% 1/16W	R712	0700058	CF 22K OHM +-5% 1/16W
R610	0700049	CF 4.7K OHM +-5% 1/16W	R715	0119609	MF 1.2 KOHM +-1% 1/8W
R611	0700041	CF 1K OHM +-5% 1/16W	R716	0119614	FR 2K OHM +-1% 1/8W
R612	0700054	CF 10K OHM +-5% 1/16W	R717	0119631	MF 10K OHM +-1% 1/8W
R613	0700054	CF 10K OHM +-5% 1/16W	R718	0119631	MF 10K OHM +-1% 1/8W
R614	0700054	CF 10K OHM +-5% 1/16W	R719	0700045	CF 2.2K OHM +-5% 1/16W
R615	0700054	CF 10K OHM +-5% 1/16W	R720	0700027	CF 100 OHM +-5% 1/16W
R616	0187088	CF 9.1K OHM +-5% 1/16W	R721	0700053	CF 8.2K OHM +-5% 1/16W
R617	0700054	CF 10K OHM +-5% 1/16W	R722	0700055	CF 12K OHM +-5% 1/16W
R618	0700043	CF 1.5K OHM +-5% 1/16W	R723	0700053	CF 8.2K OHM +-5% 1/16W
R619	0700044	CF 1.8K OHM +-5% 1/16W	R725	0150283	VR 1K OHM-B
R620	0700064	CF 56K OHM +-5% 1/16W	R726	0700041	CF 1K OHM +-5% 1/16W
R621	0700056	CF 15K OHM +-5% 1/16W	R727	0700053	CF 8.2K OHM +-5% 1/16W
R622	0700056	CF 15K OHM +-5% 1/16W	R728	0700055	CF 12K OHM +-5% 1/16W
R623	0700045	CF 2.2K OHM +-5% 1/16W	R730	0700027	CF 100 OHM +-5% 1/16W
R624	0187090	CF 11K OHM +-5% 1/16W	R74A	0119693	MF 0.39 OHM +-5% 1W
R625	0700054	CF 10K OHM +-5% 1/16W	R740	0700055	CF 12K OHM +-5% 1/16W
R626	0700056	CF 15K OHM +-5% 1/16W	R741	0700045	CF 2.2K OHM +-5% 1/16W
R627	0700064	CF 56K OHM +-5% 1/16W	R742	0700049	CF 4.7K OHM +-5% 1/16W

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R743	0113697	CF 7.5 OHM +-5% 1/2W	R821	0100085	CF 6.8K OHM +-5% 1/8W
R744	0700054	CF 10K OHM +-5% 1/16W	R822	0187104	CF 43K OHM +-5% 1/16W
R745	0700049	CF 4.7K OHM +-5% 1/16W	R823	0100123	CF 270K OHM +-5% 1/8W
R746	0700057	CF 18K OHM +-5% 1/16W	R825	0700054	CF 10K OHM +-5% 1/16W
R75C	0700049	CF 4.7K OHM +-5% 1/16W	R826	0700054	CF 10K OHM +-5% 1/16W
R75D	0700065	CF 68K OHM +-5% 1/16W	R827	0700055	CF 12K OHM +-5% 1/16W
R75E	0700036	CF 470 OHM +-5% 1/16W	R828	0700061	CF 33K OHM +-5% 1/16W
R75F	0100079	CF 3.9K OHM +-5% 1/8W	R829	0187082	CF 5.1K OHM +-5% 1/16W
R750	AT00358S	MF 1K OHM +-5% 3W	R830	01195051	FR 2.2 OHM +-5% 1/4W
R751	0188143M	CF 8.2K OHM +-5% 1/2W	R84B	0188104M	CF 10 OHM +-5% 1/2W
⚠ R753	0179617M	MG 470KOHM +-1% 1/8W	R84G	0188104M	CF 10 OHM +-5% 1/2W
R754	0700046	CF 2.7K OHM +-5% 1/16W	R84R	0188104M	CF 10 OHM +-5% 1/2W
⚠ R755	0119632	FR 11K OHM +-1% 1/8W	R85B	0188115M	CF 68 OHM +-5% 1/2W
⚠ R756	0150284	VR 2K OHM-B	R85G	0188115M	CF 68 OHM +-5% 1/2W
⚠ R757	0119631	MF 10K OHM +-1% 1/8W	R85R	0188115M	CF 68 OHM +-5% 1/2W
R758	0188142M	CF 6.8K OHM +-5% 1/2W	R850	0113815	CF 470K OHM +-5% 1/2W
R759	0188137M	CF 3.3K OHM +-5% 1/2W	R870	0100065	CF 1K OHM +-5% 1/8W
R76A	0100041	CF 100 OHM +-5% 1/8W	R872	0150305	VR 10K OHM B
R76D	0188144M	CF 10K OHM +-5% 1/2W	R874	0100065	CF 1K OHM +-5% 1/8W
R760	0100035	CF 56 OHM +-5% 1/8W	R875	0119838	FR 0.5 OHM +-5% 1/4W
R761	0700053	CF 8.2K OHM +-5% 1/16W	⚠ R901	CJ00141	TH
R762	0187086	CF 7.5K OHM +-5% 1/16W	R902	CJ00111	TH ZPK68BL9ROB
R763	0700052	CF 6.8K OHM +-5% 1/16W	R903	0140959M	MF 470K OHM +-5% 1/2W
R764	0700042	CF 1.2K OHM +-5% 1/16W	R904	0140959M	MF 470K OHM +-5% 1/2W
R765	0700041	CF 1K OHM +-5% 1/16W	R905	0100109	CF 68K OHM +-5% 1/8W
R766	0700054	CF 10K OHM +-5% 1/16W	R906	0100109	CF 68K OHM +-5% 1/8W
R767	AT00292S	MF 3.3 OHM +-5% 3W	R907	0100109	CF 68K OHM +-5% 1/8W
R768	AT00498S	MF 180 OHM +-5% 2W	⚠ R91A	AT00649M	CF 1.6K OHM +-2% 1/16W
R769	0113756	CF 1.8K OHM +-5% 1/2W	R91B	0188105M	CF 12OHM +-5% 1/2W
R77A	0119690	MF 0.27 OHM +-5% 1W	R91C	0187096	CF 20K OHM +-5% 1/16W
R77D	0119691	MG 0.33 OHM +-5% 1W	R91D	0700037	CF 560 OHM +-5% 1/16W
R770	0100099	CF 27K OHM +-5% 1/8W	R91E	0100081	CF 4.7K OHM +-5% 1/8W
R771	0700052	CF 6.8K OHM +-5% 1/16W	R91F	0700067	CF 100K OHM +-5% 1/16W
R772	0700054	CF 10K OHM +-5% 1/16W	R91G	0700049	CF 4.7K OHM +-5% 1/16W
R773	0700054	CF 10K OHM +-5% 1/16W	R91H	0700043	CF 1.5K OHM +-5% 1/16W
R777	0700054	CF 10K OHM +-5% 1/16W	R91J	0700056	CF 15K OHM +-5% 1/16W
R779	0700054	CF 10K OHM +-5% 1/16W	R91K	0700014	CF 10 OHM +-5% 1/16W
R78F	0113729	CF 150 OHM +-5% 1/2W	R91L	0700053	CF 8.2K OHM +-5% 1/16W
R781	0700054	CF 10K OHM +-5% 1/16W	R91M	0100133	CF 680K OHM +-5% 1/8W
R782	0113729	CF 150 OHM +-5% 1/2W	R91N	0700067	CF 100K OHM +-5% 1/16W
R783	0700054	CF 10K OHM +-5% 1/16W	R91P	0100045	CF 150 OHM +-5% 1/8W
R784	0700054	CF 10K OHM +-5% 1/16W	R91S	0700055	CF 12K OHM +-5% 1/16W
R79H	0113764	CF 3.9K OHM +-5% 1/2W	R910	AT00263S	MF 0.27 OHM +-5% 3W
R791	0700051	CF 5.6K OHM +-5% 1/16W	R911	0140955M	MF 220K OHM +-5% 1/2W
⚠ R792	0119639M	RN 22K OHM +-1% 1/8W	R912	0140955M	MF 220K OHM +-5% 1/2W
⚠ R793	0119628M	MF 7.5K OHM +-1% 1/8W	R913	0700045	CF 2.2K OHM +-5% 1/16W
⚠ R794	0119609	MF 1.2 KOHM +-1% 1/8W	R914	0140955M	MF 220K OHM +-5% 1/2W
R801	0700049	CF 4.7K OHM +-5% 1/16W	R915	0140955M	MF 220K OHM +-5% 1/2W
R803	0700048	CF 3.9K OHM +-5% 1/16W	R916	0150282	VR 500 OHM(B)
R804	0187064	CF 910 OHM +-5% 1/16W	⚠ R917	01196111	FR 1.5K OHM +-1% 1/8W
R805	0113768	CF 5.6K OHM +-5% 1/2W	R918	0140955M	MF 220K OHM +-5% 1/2W
R806	0188146M	CF 15K OHM +-5% 1/2W	R919	0140955M	MF 220K OHM +-5% 1/2W
R807	0188135M	CF 2.2K OHM +-5% 1/2W	R92A	0700018	CF 22 OHM +-5% 1/16W
R808	0700025	CF 68 OHM +-5% 1/16W	R92B	0700032	CF 220 OHM +-5% 1/16W
R815	0700032	CF 220 OHM +-5% 1/16W	R92C	0700049	CF 4.7K OHM +-5% 1/16W
R820	0100125	CF 330K OHM +-5% 1/8W	R92E	0700067	CF 100K OHM +-5% 1/16W

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SYMBOL NO.	PART NO.	DESCRIPTION	SYMBOL NO.	PART NO.	DESCRIPTION
R92H	0700054	CF 10K OHM +-5% 1/16W	I104	CP03991U	IC BR9020
R92K	0700058	CF 22K OHM +-5% 1/16W	I105	CP03991U	IC BR9020
R920	AT00572S	MF 100K OHM +-5% 2W	I107	CP04001U	IC DS14C23CN
⚠ R921	0119690	MF 0.27 OHM +-5% 1W	I109	CP00511U	IC MM1096BD
⚠ R922	0119690	MF 0.27 OHM +-5% 1W	I201	CP04391U	IC M52737SP
R923	0700054	CF 10K OHM +-5% 1/16W	I202	CP04401	IC VP553
⚠ R924	0700029	CF 150 OHM +-5% 1/16W	I203	CP01931	IC TDA6103
R925	0113701	CF 10 OHM +-5% 1/2W	I204	CP02361	IC NJM4558L
R926	0700046	CF 2.7K OHM +-5% 1/16W	I205	CP02361	IC NJM4558L
R927	0187078	CF 3.6K OHM +-5% 1/16W	I301	CP02831	IC M35045-058SP
R929	0188135M	CF 2.2K OHM +-5% 1/2W	I302	2360951	IC HD74LS04P
R93A	0700054	CF 10K OHM +-5% 1/16W	I304	CP02821U	IC M52347SP
R93B	0700067	CF 100K OHM +-5% 1/16W	I305	2916901	IC HD74HC123AP
R93D	0700058	CF 22K OHM +-5% 1/16W	I306	2910815	IC HD74HC00P
R93E	0700067	CF 100K OHM +-5% 1/16W	I361	CP01042U	IC 24LC21A- /P
R93H	0700054	CF 10K OHM +-5% 1/16W	I381	2916901	IC HD74HC123AP
R93K	0700054	CF 10K OHM +-5% 1/16W	I382	2910815	IC HD74HC00P
R930	0113795	CF 68K OHM +-5% 1/2W	I501	2003621	IC NJM072D
⚠ R931	0119690	MF 0.27 OHM +-5% 1W	I502	CP02361	IC NJM4558L
⚠ R932	0119690	MF 0.27 OHM +-5% 1W	I503	2364631	IC HD14046BP
R933	0700054	CF 10K OHM +-5% 1/16W	I504	2916901	IC HD74HC123AP
R934	0700029	CF 150 OHM +-5% 1/16W	I505	CP04172	IC M52723ASP
R935	0113735	CF 270 OHM +-5% 1/2W	I506	2020591	IC M5207L05
R936	AT00516S	MF 820 OHM +-5% 2W	I507	CP02361	IC NJM4558L
R937	0700056	CF 15K OHM +-5% 1/16W	I508	CP02361	IC NJM4558L
R938	0150282	VR 500 OHM(B)	I620	CP02361	IC NJM4558L
R939	0700043	CF 1.5K OHM +-5% 1/16W	I630	CP04181	IC LA7841L
R940	0700024	CF 56 OHM +-5% 1/16W	I631	2003283	IC LA6510
R941	0113797	CF 82K OHM +-5% 1/2W	I701	CP04161	IC UPC1883CT(MS)
R942	0700018	CF 22 OHM +-5% 1/16W	I703	CP02361	IC NJM4558L
R943	0700026	CF 82 OHM +-5% 1/16W	I704	2916901	IC HD74HC123AP
R97A	0700047	CF 3.3K OHM +-5% 1/16W	I705	2910834	IC HD74HC74 P
R97B	0700054	CF 10K OHM +-5% 1/16W	I706	2360931	IC HD74LS00P
R97C	0700054	CF 10K OHM +-5% 1/16W	I707	2910834	IC HD74HC74 P
R97E	0119639M	RN 22K OHM +-1% 1/8W	I708	2020591	IC M5207L05
R970	0100071	CF 1.8K OHM +-5% 1/8W	I709	CP02361	IC NJM4558L
⚠ R971	0119651	MG 68KOHM +-1% 1/8W	I710	2004561R	IC HA178L09A(TA)
⚠ R972	0119651	MG 68KOHM +-1% 1/8W	I751	CP02361	IC NJM4558L
R973	0150282	VR 500 OHM(B)	I901	CJ00022	IC TLP721F (D4-GR)
R974	0119622	MF 4.3K OHM +-1% 1/8W	⚠ I911	CP04331	IC FA5331P
R975	0700061	CF 33K OHM +-5% 1/16W	⚠ I921	CP01141	IC FA5304AP
R976	0119618M	MF 3K OHM +-1% 1/8W	⚠ I922	CJ00022	IC TLP721F (D4-GR)
R977	0700067	CF 100K OHM +-5% 1/16W	⚠ I923	CF10432G	TR PC123FY8
R978	0700054	CF 10K OHM +-5% 1/16W	⚠ I931	CP01141	IC FA5304AP
R979	0700045	CF 2.2K OHM +-5% 1/16W	⚠ I932	CJ00022	IC TLP721F (D4-GR)
R981	0700039	CF 820 OHM +-5% 1/16W	⚠ I940	CP04341F	IC MIP160
R982	0700045	CF 2.2K OHM +-5% 1/16W	I971	2388303	IC XRA4558 (LINEAR)
R983	0700027	CF 100 OHM +-5% 1/16W	I981	CP02422	IC SI-3121N
R984	0700043	CF 1.5K OHM +-5% 1/16W	I982	2000642	IC SI-3240CA
R997	0700066	CF 82K OHM +-5% 1/16W	I991	2020501	IC AN7805F
R998	0100049	CF 220 OHM +-5% 1/8W	Q10P	2325721	TR 2SC1740S
R999	0700053	CF 8.2K OHM +-5% 1/16W	Q101	2325721	TR 2SC1740S
I001	2008721	IC M62358P	Q22B	2312821	TR 2SC3779D/E
I002	2008721	IC M62358P	Q22G	2312821	TR 2SC3779D/E
I051	2008721	IC M62358P	Q22R	2312821	TR 2SC3779D/E
I102	CP04151U	IC HD6433256A51P	Q253	2325721	TR 2SC1740S

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SYMBOL NO.	PART NO.	DESCRIPTION	SYMBOL NO.	PART NO.	DESCRIPTION
Q303	2326872	TR DTC114ES SI	Q931	2325721	TR 2SC1740S
Q305	2326872	TR DTC114ES SI	Q932	2325713	TR 2SA933S (R)
Q560	2324321	TR 2SC2610-05	Q971	2325721	TR 2SC1740S
Q561	2315341F	TR 2SC4632HIT-CB7	Q972	2325721	TR 2SC1740S
Q562	2315631F	TR 2SC4633	Q973	2326872	TR DTC114ES SI
Q563	2315631F	TR 2SC4633	Q981	2326872	TR DTC114ES SI
Q601	CF01571R	TR 2SK940	Q982	2325721	TR 2SC1740S
Q602	2326871	TR DTC124ES	Q999	2325713	TR 2SA933S (R)
Q70A	2326871	TR DTC124ES	D049	CH00182R	LED SLZ-381C-06-T1(T)
Q701	2325721	TR 2SC1740S	D1FZ	2339851	ZD HZS7A1
Q702	2325713	TR 2SA933S (R)	D100	23373411	DI 1SS270A
Q703	2325713	TR 2SA933S (R)	D101	23373411	DI 1SS270A
Q704	2325721	TR 2SC1740S	D102	23373411	DI 1SS270A
Q740	2325721	TR 2SC1740S	D103	23373411	DI 1SS270A
⚠ Q741	CF00921F	TR FS7KM-18A-AT	D104	23373411	DI 1SS270A
Q742	2321872	TR 2SD655E	D105	23373411	DI 1SS270A
Q743	CF01081R	TR 2SA966-Y(TPE6.C)	D2BB	23373411	DI 1SS270A
Q744	2326871	TR DTC124ES	D2BG	23373411	DI 1SS270A
Q745	CF01561F	TR FS3KM-10	D2BR	23373411	DI 1SS270A
Q748	2325713	TR 2SA933S (R)	D21B	23373411	DI 1SS270A
Q749	2325726M	TR 2SC1740S Q	D21G	23373411	DI 1SS270A
Q750	2328102F	TR FN521	D21R	23373411	DI 1SS270A
Q751	2324321	TR 2SC2610-05	D22B	23373411	DI 1SS270A
Q754	2324321	TR 2SC2610-05	D22G	23373411	DI 1SS270A
Q760	CF00811U	TR FS5KM-5	D22R	23373411	DI 1SS270A
Q761	2312173	TR 2SD2375(Q)	D24B	2331912	DI 1SS82 SI
Q762	2325721	TR 2SC1740S	D24G	2331912	DI 1SS82 SI
Q763	2325721	TR 2SC1740S	D24R	2331912	DI 1SS82 SI
Q764	CF01551F	TR 2SC5411	D241	CH00151M	DI DSM1SD2
Q771	2325721	TR 2SC1740S	D242	23373411	DI 1SS270A
Q776	2326871	TR DTC124ES	D243	23373411	DI 1SS270A
Q777	CF00931U	TR 2SK2382(S4HITTO)	D244	23373411	DI 1SS270A
Q778	2326871	TR DTC124ES	D25B	23373411	DI 1SS270A
Q779	CF00931U	TR 2SK2382(S4HITTO)	D25G	23373411	DI 1SS270A
Q780	2326871	TR DTC124ES	D25R	23373411	DI 1SS270A
Q781	CF00931U	TR 2SK2382(S4HITTO)	D251	23373411	DI 1SS270A
Q782	2326871	TR DTC124ES	D252	23373411	DI 1SS270A
Q783	CF00931U	TR 2SK2382(S4HITTO)	D253	23373411	DI 1SS270A
Q784	2326871	TR DTC124ES	D256	23373411	DI 1SS270A
Q785	CF00931U	TR 2SK2382(S4HITTO)	D271	23373411	DI 1SS270A
Q800	2328102F	TR FN521	D273	23373411	DI 1SS270A
Q801	2324321	TR 2SC2610-05	D33Z	2334134	ZD RD5.6EB3
Q804	2324321	TR 2SC2610-05	D34Z	2334134	ZD RD5.6EB3
Q820	2327881	TR 2SA1207S	D35Z	2334134	ZD RD5.6EB3
Q821	2327881	TR 2SA1207S	D36Z	2334134	ZD RD5.6EB3
Q822	2327881	TR 2SA1207S	D50Z	2339837	ZD HZS-5C1
Q823	2326871	TR DTC124ES	D51Z	2334294M	ZENER DIODE RD27EB3
Q824	2326871	TR DTC124ES	D522	23373411	DI 1SS270A
Q870	2312173	TR 2SD2375(Q)	D523	23373411	DI 1SS270A
Q871	2315931	TR 2SB1548A-P	D562	23373411	DI 1SS270A
Q910	CF01581F	TR 2SK2223-01R-F168R	D563	23373411	DI 1SS270A
Q911	2325713	TR 2SA933S (R)	D57Z	2339847	ZD HZS6C1
⚠ Q920	CF01591F	TR 2SK2717	D578	23385311	DI EG01C
Q921	2325713	TR 2SA933S (R)	D579	23385311	DI EG01C
Q922	2325721	TR 2SC1740S	D618	23373411	DI 1SS270A
⚠ Q930	CF00911F	TR FS3KM-16A-AT	D630	CH00151M	DI DSM1SD2

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SYMBOL NO.	PART NO.	DESCRIPTION	SYMBOL NO.	PART NO.	DESCRIPTION
D64Z	2339847	ZD HZS6C1	⚠ T780	BZ01971	CHOKE TARNSFORMER
⚠ D7AZ	2339837	ZD HZS-5C1	⚠ T920	BT00761	TRANSFORMER
D70Z	2339837	ZD HZS-5C1	⚠ T930	BT00771	TRANSFORMER
D701	23373411	DI 1SS270A	⚠ T940	BT00512	TRANSFORMER
D702	CH00151M	DI DSM1SD2	⚠ F901	2722446	FUSE 4A
D71Z	2339867	ZD HZS9C1	L02F	2123469M	FERRITE BEADS CORE READ 2.3
D745	23373411	DI 1SS270A	L03F	2123469M	FERRITE BEADS CORE READ 2.3
D746	23373411	DI 1SS270A	L050	2122956	LA AXIAL COIL 100 MICRO H +-10%
⚠ D75Z	2339837	ZD HZS-5C1	L051	2123469M	FERRITE BEADS CORE READ 2.3
D761	2348432M	DI RMPG06G	L241	2123781	FILTER COIL
D77Z	2339192M	ZENER DIODE HZS20-2L TA	L251	2123468	FERRITE BEADS CORE LEAD 0.8
D770	CH01071M	DI 2FWJ42	L252	2123468	FERRITE BEADS CORE LEAD 0.8
D771	CH00661	DI 5TUZ47C	L254	2123468	FERRITE BEADS CORE LEAD 0.8
D773	2349571M	DI SM-1XP2TP	L255	2123468	FERRITE BEADS CORE LEAD 0.8
D775	23373411	DI 1SS270A	L40F	2123468	FERRITE BEADS CORE LEAD 0.8
⚠ D79Z	2339133	ZD HZS12A3L	L41F	2123468	FERRITE BEADS CORE LEAD 0.8
D790	2349571M	DI SM-1XP2TP	L540	2122956	LA AXIAL COIL 100 MICRO H +-10%
D803	23373411	DI 1SS270A	L541	2122956	LA AXIAL COIL 100 MICRO H +-10%
D821	23373411	DI 1SS270A	L605	2122242	LA AXIAL COIL 15 MICRO H
D822	23373411	DI 1SS270A	L63F	2123469M	FERRITE BEADS CORE READ 2.3
D823	2338532	DI EG-01A	L710	2122239	LA AXIAL COIL 10 MICRO H
D824	23373411	DI 1SS270A	L72A	2220573	COIL
D840	2342711	DI EM2A	L72F	2123469M	FERRITE BEADS CORE READ 2.3
D87Z	2339811	ZD HZS3A1	L74F	2123469M	FERRITE BEADS CORE READ 2.3
D870	CH01101M	DI SM-1XH02TP	⚠ L741	BZ01951	COIL 390MH
D871	CH01101M	DI SM-1XH02TP	L761	2123781	FILTER COIL
D901	2349721	DI D5SBA60	L770	BZ01693	LINEARITY COIL 2MH
D902	CH01104M	DI SM-1XH08TP	L771	BZ01694	LINEARITY COIL 1.2MH
D91Z	2339851	ZD HZS7A1	L791	2122956	LA AXIAL COIL 100 MICRO H +-10%
⚠ D910	2349911	DI D3L60	L85F	2123468	FERRITE BEADS CORE LEAD 0.8
D911	2339551	DI EK14	L851	2123468	FERRITE BEADS CORE LEAD 0.8
D912	23373411	DI 1SS270A	L875	2125816F	COIL 270MH
D92Z	2339952	ZD HZS27-2	L900	BZ01991	DEGAUSSING COIL
⚠ D920	23385311	DI EG01C	⚠ L901	2169462	COIL
D93Z	2339952	ZD HZS27-2	⚠ L902	2169462	COIL
D930	23385311	DI EG01C	L91F	2123469M	FERRITE BEADS CORE READ 2.3
D931	23385611	DI ERA32-02	⚠ L910	BV00761	CHOKE COIL 700MH
D932	2342711	DI EM2A	L93F	2123468	FERRITE BEADS CORE LEAD 0.8
D933	2349571M	DI SM-1XP2TP	L94F	2123469M	FERRITE BEADS CORE READ 2.3
D94Z	2339952	ZD HZS27-2	L95F	2123469M	FERRITE BEADS CORE READ 2.3
D941	23385311	DI EG01C	L96F	2123469M	FERRITE BEADS CORE READ 2.3
D942	2349571M	DI SM-1XP2TP	L97A	2220577	HIGH FREQUENCY COIL
D943	2349571M	DI SM-1XP2TP	L97F	2123469M	FERRITE BEADS CORE READ 2.3
D95Z	2339857	ZD HZS7C1	L98F	2123469M	FERRITE BEADS CORE READ 2.3
⚠ D971	CH01081	DI FMC-G28S	L981	2123781	FILTER COIL
D972	23373411	DI 1SS270A	L99F	2123469M	FERRITE BEADS CORE READ 2.3
D981	23385311	DI EG01C	S001	2632851	TACTO SWITCH
D982	CH01091M	DI EL1	S002	2632851	TACTO SWITCH
D983	2348901	DI D3L20U	S003	2632851	TACTO SWITCH
D984	CH00651M	DI SS1J6TP(T)	S01	EW02631	CABLE.SIGNAL
D985	23385611	DI ERA32-02	S77R	2640576	RELAY
D99Z	2339837	ZD HZS-5C1	⚠ S901	2634732	POWER SWITCH
D991	2349571M	DI SM-1XP2TP	⚠ S91R	2640576	RELAY
D998	23373411	DI 1SS270A	⚠ V1	DE01391	C.P.T WITH D.Y M46LLQ683X10(U)
⚠ T750	BW00721	FLYBACK TRANSFORMER HFL1327YD		3330941	EARTH SPRING
⚠ T770	BZ01961	DRIVE TRANSFORMER		3332452	90 KNOB SPRING

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SYMBOL NO.	PART NO.	DESCRIPTION	SYMBOL NO.	PART NO.	DESCRIPTION
	3705233	ANODE CLAMPER	N982	4520889	SCREW M3X10
	3763752	SK BINDER	P201	EQ00131	15P D-SUB MINI CONNECTOR
	3782719	PCB SUPPORT	X101	BP00401	CRYSTAL OSX200X13(19.6608)HC
	4319361	M4X12 CE KNURL TAPPING SCREW	X20B	2791761R	DIGITAL FILTER 2200PF
	4519505	3X16 B TIGHT TAPPING SCREW	X20G	2791761R	DIGITAL FILTER 2200PF
	4519512	TAPPING SCREW 4X16 MM	X20R	2791761R	DIGITAL FILTER 2200PF
	4519521	5X20 WASHER BASED SCREW	X302	2791761R	DIGITAL FILTER 2200PF
	4522881	3X8 CE KNURL SCREW	X303	2791761R	DIGITAL FILTER 2200PF
	4528451	M4 SCREW WITH WASHER	X304	2791761R	DIGITAL FILTER 2200PF
	4616824	RUBBER FOOT			
	8711608	4X8 PAN HEAD SCREW			
	8815126	LOCKING WASHER 4			
	QD03981	REAR COVER			
	QD04193	TILT BASE ASS'Y			
	QD04207	BEZEL S-ASS'Y			
EP	EV00021	CORD POWER			
E011	2673712	PIN JACK			
E091	ED01273	15PIN PLUG			
E092	ED01273	15PIN PLUG			
E10	BZ01011	COIL			
E20	EF06041	8PIN CONNECTOR			
E251	ED01293	15PIN CONNECTOR			
E252	ED01293	15PIN CONNECTOR			
E853	EY00631	JACK			
E90F	2721351	FUSE HOLDER			
⚠ E901	2676371	AC INLET			
G560	CJ00071R	SPARK GAP			
G851	2340741M	SPARK GAP			
G852	2340741M	SPARK GAP			
G853	2340741M	SPARK GAP			
G854	2340741M	SPARK GAP			
K21B	0195250R	RESISTOR,CHIP 0 OHM 1/16W			
K21G	0195250R	RESISTOR,CHIP 0 OHM 1/16W			
K21R	0195250R	RESISTOR,CHIP 0 OHM 1/16W			
K342	0195250R	RESISTOR,CHIP 0 OHM 1/16W			
K344	0195250R	RESISTOR,CHIP 0 OHM 1/16W			
K347	0195250R	RESISTOR,CHIP 0 OHM 1/16W			
K348	0195250R	RESISTOR,CHIP 0 OHM 1/16W			
K351	0195250R	RESISTOR,CHIP 0 OHM 1/16W			
K362	0195250R	RESISTOR,CHIP 0 OHM 1/16W			
K391	0195250R	RESISTOR,CHIP 0 OHM 1/16W			
N561	4520889	SCREW M3X10			
N562	4519506	3X8 B TIGHT TAPPING SCREW			
N563	4519506	3X8 B TIGHT TAPPING SCREW			
N630	4520889	SCREW M3X10			
N741	4520889	SCREW M3X10			
N761	4520889	SCREW M3X10			
N764	4520889	SCREW M3X10			
N771	4520889	SCREW M3X10			
N800	4520889	SCREW M3X10			
N870	4520889	SCREW M3X10			
N910	4520889	SCREW M3X10			
N920	4520889	SCREW M3X10			
N930	4520889	SCREW M3X10			
N971	4520889	SCREW M3X10			
N981	4520889	SCREW M3X10			

HITACHI

CM751 **YK No.0043E Image & Information Media Systems Division**
Image &Media Systems Operation

QR23191

Printed in Japan (M)

HITACHI

SERVICE MANUAL

SUPPLEMENT

YK | No. 0043E-1

CM751

C98A Chassis

(V1.1)

NOTE: This model have same name as one of the C98 chassis, "CM751", but the circuit of the two chassiss are different. Use this Service Manual to C98A shassis.

CAUTION: Before servicing this chassis, it is important that the service personnel must read the "Safety Precautions" and "Product Safety Notice" in this Service Manual.

CONTENTS

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT.

HIGH RESOLUTION COLOR DISPLAY MONITOR

(DECEMBER 1997)

FEATURES

1 Flat screen CRT with anti-glare, dynamic focus circuit,dark glass, and INVAR shadow mask give the sharpest focus and highest contrast.
2. Automatic scanning and automatic adjustment to conform with a wide range of scanning frequencies and user requirements.
3. Signal input allows D-Sub Min 15pin cable.
4. Power Save Mode automatically puts the monitor into a standby mode (power consumption less than 30W) when the H.sync. signal is not detected, and a power - off mode(less than 5W) when the V.sync, signal is not detected. Normal mode is restored immediately when the H. sync. signal and the V.sync signal are detected. This feature prolongs monitor life and reduces energy consumption by up to about 75 %.

SAFETY PRECAUTIONS

NOTICE: Comply with all cations and safety related notes located on or inside the cabinet and on the chassis or picture tube.

The following precautions must be observed.

1 Do not install, remove, or handle the picture tube in any manner unless shatterproof goggles are worn. People not so equipped should be kept away while picture tubes are handled.
2. When replacing a chassis in the monitor, all the protective devices must be put back in place, such as, barriers, non-metallic knobs, adjustment and compartment shields, and isolation resistor-capacitor, etc.
3. When service is required, observe the original lead dress. Extra precaution should be taken to assure correct lead dress in the high voltage circuitry area.
4 Always use the manufacturer's replacement components. Especially critical components as indicated on the circuit diagram should not be replaced by other manufacturer's. Furthermore where a short circuit has occurred, replace those components that indicate evidence of overheating.
5. Before returning a serviced monitor to the customer, the service personnel must throughly test unit to be certain that it is completely safe to operate without danger of electrical shock, and be sure that no protective device built into the monitor by the manufacturer has become defective, or inadvertently defeated during servicing.
   Therefore, the following checks should be performed for continued protection of the customer and service technician.
6. In the case of the micro prossesor unit, shop adjustment is necessary after exchange of the micro prossesor unit.

High Voltage

This monitor is provided with a high voltage hold down circuit for clearly indicating that voltage has increased in excess of a predetermined value.
Comply with notes described in this Service Manual regarding this hold down circuit when servicing, so that this hold down circuit may function correctly.

Service Warning

With minimum Brightness and Contrast the operating high voltage in this display is lower than 30 kV.
If any component having influence on the high voltage is replaced, confirm that the high voltage with minimum Brightness and Contrast is lower than 30 kV
To measure high voltage use a high impedance highvaltage meter. (SENSITIVE RESEARCH Model: ESH or Equivalent)
Connect (−) to chassis earth and (+) to the CDT anode button. (See the following connection diagram Fig. 1.)

NOTE: Turn power switch off without fail before making the connection to the Anode button

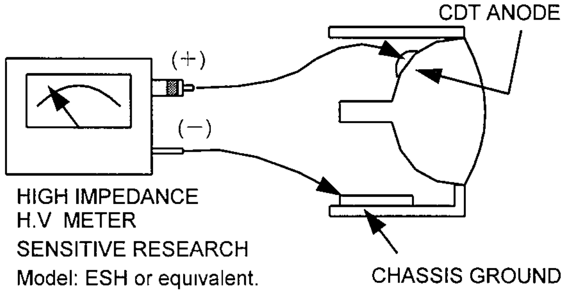


Fig. 1

X-radiation

TUBE: The source of X-radiation in this monitor is the picture tube. The tube utilized in this chassis is specially constructed to limit X-radiation emissions.
For continued X-radiation protection, the replacement tube must be the same type as the original, manufacturer approved type.
When troubleshooting and making test measurements in a monitor with a problem of excessive high voltage, avoid being unnecessarily close to the picture tube and the high voltage components.
Do not operate the chassis longer than is necessary to locate the cause of excessive voltage.

CHECK OF HIGH VOLTAGE HOLD DOWN CIRCUIT

Checking of the high Voltage hold down circuit operation.

1. Turn the switch of the unit ON, and set the Brightness and Contrast controls to max.
2. Turn the switch of the unit OFF
3. Connect a DC Voltmeter and an adjustment jig as shown in Fig. 2.
4. Set the adjustment VR to fully counterclockwise.
5. Turn the switch of the unit ON and gradually rotate the adjustment VR clockwise.
6. Check that a reading of DC voltage-meter is less-than 0.6 ± 0.1 V when picture disappears.
7 Turn the switch of the unit OFF immediately after checking that the picture disappears.
8. Remove the adjusting jig and the DC voltmeter

NOTE: Reading of 0.6 V is approximately equivalent to 30 kV of CDT Anode High Voltage.

PRODUCT SAFETY NOTICE

Many electrical mechanical parts in the color monitor units have special safety related characteristics.
These are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.
Electrical components having such features are identified by markin with ⚠ on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which does not have the same safety characteristics as the manufacturer recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, X-radiation, or other hazards.
Productions are issued from time to time. For the latest information, always consult this Service Manual.

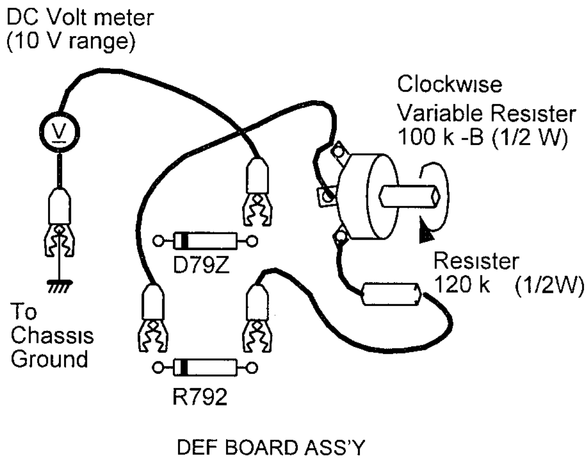
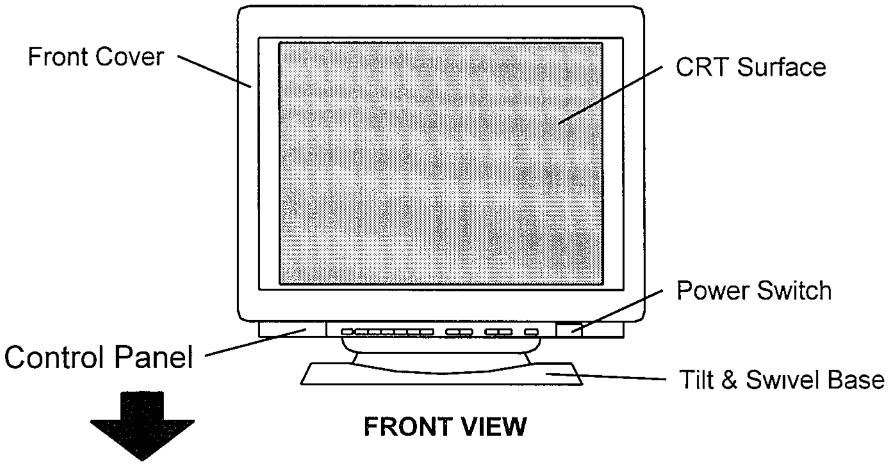


Fig. 2 Checking Circuit using jig

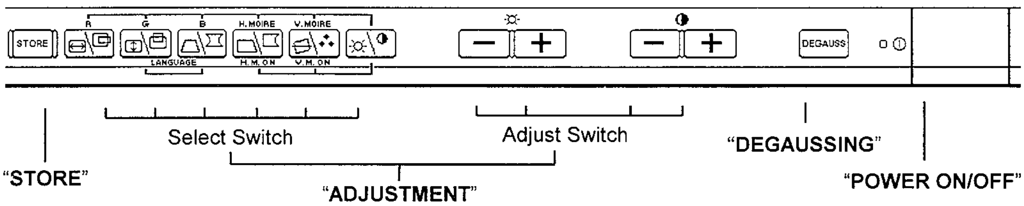
SPECIFICATIONS

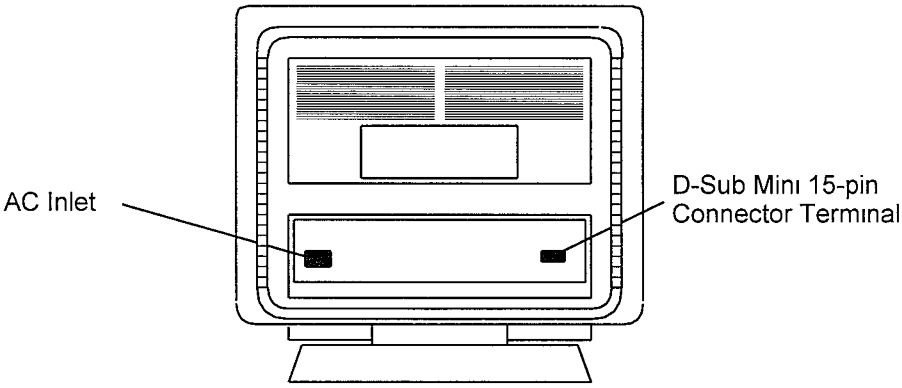
Model Name		CM751U	CM751ET		
Destination		North America	Europe		
Rated Voltage		AC 100-120 / 200-240 V, Automatically select. Provided with Power Circuit.			
Power Consumption		130 W nominal			
Color Display Tube (CDT)		19inch inches diagonal, 0.26 mm pitch Invar shadow mask, Black matrix, Anti-Reflection coat, Short persistence phosphors.			
Rated Frequency	Horizontal	31 - 93 kHz	31 - 93 kHz		
	Vertical	50 - 160 Hz			
Resolution	Horizontal	Up to 1600			
	Vertical	Up to 1280			
Signal Inputs		Red, Green and Blue analog video H/V separate, H/V composite or Sync .on Green sync.			
User Controls		Power Switch Degauss Store Contrast Brightness Horizontal Position, Size Vertical Position, Size Right Side Pincushion Right Trapezoid	Side Pincushion Trapezoid Language select Red,Green,Blue intensity Color Select Rotation H Moire Reduction V Moire Reduction		
Environmental Condition		 Temperature Humidity	Operation 5 ℃ to 40 ℃ 10% to 80%	Storage −20 ℃ to 60 ℃ 10% to 90 %	
Dimensions		448 (W) × 454 (H) × 460 (D) mm Including Tilt & Swivel base.			
Weight		24 kg			

CONTROLS



FRONT VIEW





REAR VIEW

SIGNAL TIMING CHART

	Signal		VGA 640×480	VESA 800×600 (85Hz)	VESA 1024×768 (85Hz)	
1	Video	Type	R/G/B Analog	R/G/B Analog	R/G/B Analog	
		Voltage	0.7 Vp-p	0.7 Vp-p	0.7 Vp-p	
		Set Up	None	None	None	
2	Sync	Type	H/V Separate	H/V Separate	H/V Separate	
		Amp.	TTL Level (Nega.)	TTL Level (Posi.)	TTL Level (Posi.)	
3	Video frequency		25.175 MHz	56.250 MHz	94.500 MHz	
4	Character (Letter)		640dots×480lines	800dots×600lines	1024dots×768lines	
5	Horizontal	Frequency	31 469 kHz	53.674 kHz	68.677 kHz	
		Front porch	0.636 μs (16cl)	0.569 μs (32cl)	0.508 μs (48cl)	
		Sync. width	3.813 μs (96cl)	1 138 μs (64cl)	1.016 μs (96cl)	
		Back porch	1.907 μs (48cl)	2.702 μs (152cl)	2.201 μs (208cl)	
		Blanking widht	6.356 μs (160cl)	4.409 μs (248cl)	3.725 μs (352cl)	
		Display time	25.422 μs (640cl)	14.222 μs (800cl)	10.836 μs (1024cl)	
		H.period (1H)	31 778 μs (800cl)	18.631 μs (1048cl)	14.561 μs (1376cl)	
6	Vertical	Frequency	59.940 Hz	85.062 Hz	85.000Hz	
		Front porch	0.318 ms (10H)	0.019 ms (1H)	0.015 ms (1H)	
		Sync. width	0.064 ms (2H)	0.056 ms (3H)	0.044 ms (3H)	
		Back porch	1.049 ms (33H)	0.503 ms (27H)	0.524 ms (36H)	
		Blanking widht	1 431 ms (45H)	0.578 ms (31H)	0.582 ms (40H)	
		Display time	15.253 ms (480H)	11 179 ms (600H)	11 183 ms (768H)	
		H.period (1H)	16.683 ms (525H)	11 756 ms (631H)	11 765 ms (808H)	
7	Scan System		(Non-interlaced)	(Non-interlaced)	(Non-interlaced)	
8	Remark					
9	Signal name		30C	54A	68A	

* VGA is a registered trademark of International Business Machined Corporation.

* VESA is a trademark of a nonprofit organization, Video Electronics Standard Association.

	Signal		VGSA 1280×1024 (85Hz)	VESA 1600×1200 (75Hz)	fHLL Adjustment signal	
1	Video	Type	R/G/B Analog	R/G/B Analog	R/G/B Analog	
		Voltage	0.7 Vp-p	0.7 Vp-p	0.7 Vp-p	
		Set Up	None	None	None	
2		Type	H/V Separate	H/V Separate	H/V Separate	
		Amp.	TTL Level (Posi.)	TTL Level (Posi.)	TTL Level (Neg.)	
3	Video frequency		157.500 MHz	202.500 MHz	24.000 MHz	
4	Character (Letter)		1280dots×1024lines	1600dots×1200lines	640dots×410lines	
5	Horizontal	Frequency	91.146 kHz	93.750 kHz	30.000 kHz	
		Front porch	0.406 μs (64cl)	0.316 μs (64cl)	0.417 μs (10cl)	
		Sync. width	1.016 μs (160cl)	0.948 μs (192cl)	3.917 μs (94cl)	
		Back porch	1 422 μs (224cl)	1.501 μs (304cl)	2.333 μs (56cl)	
		Blanking widht	2.844 μs (448cl)	2.765 μs (560cl)	6.667 μs (160cl)	
		Display time	8.127 μs (280cl)	7.901 μs (1600cl)	26.667 μs (640cl)	
		H.period (1H)	10.971 μs (1728cl)	10.667 μs (2160cl)	33.333 μs (800cl)	
6	Vertical	Frequency	85.024 Hz	75.000 Hz	50.000 Hz	
		Front porch	0.011ms (1H)	0.011 ms (1H)	2.967 ms (89H)	
		Sync. width	0.033 ms (3H)	0.032ms (3H)	0.133ms (4H)	
		Back porch	0.483 ms (44H)	0.491 ms (46H)	3.233 ms (97H)	
		Blanking widht	0.527 ms (48H)	0.533 ms (50H)	6.333 ms (190H)	
		Display time	11.235 ms (1024H)	12.800 ms (1200H)	13.667 ms (410H)	
		H.period (1H)	11.761 ms (1072H)	13.333 ms (1250H)	20.000 ms (600H)	
7	Scan System		(Non-interlaced)	(Non-interlaced)	(Non-interlaced)	
8	Remark					
9	Signal name		91A	94A	30w	

DISCRIPTION OF CIRCUIT

1. Power Supply Circuit

This model incorporates a wide range universal power supply utilizing a switching regulator (see block diagram in Figure 1).

1.1 AC input

AC input consists of AC inlet, EMI filter (C901～C907) and rectifier D901 Rectifier circuits adapt to full-wave method.Inrush current limiting circuit (R902) protects from excessive inrush current at initial stage of power on.

1.2 Circuit #1 :

Circuit 1 consists of chopper inductor (L910), chopper component (Q910),rectifier cmponent (D910,C911) and control IC (I911). R911,R912 andR913 detect input voltage and provide signal to I911 pin 3 which adjusts the pulse width based on the pin 3 voltage level to provide constant voltage output. Switching operation is performed by frequency synchronization with circuit #2, to control I911 pin 14 from circuit #2.

1.3 Switching Regulator circuit

Switching Regulator circuit is designed to handle variations of two conditions to ensure constant +B voltage to secondary circuit (Circuit 2) varying load conditions of video, (Circuit 3) varying horizontal frequencies and varying load conditions.

1.3.1 Circuit #2 :

Circuit 2 consists of chopper transformer (T930), chopper component (Q930) and control IC (I931). T930 detects output voltage and provides signal to I931 pin 1 which adjusts the pulse width based on the pin 1 voltage level to provide constant voltage output. If the secondary circuit becomes overloaded, primary current through T930 is detected at R931, R932 and stops the switching operation. Once the circuit has overloaded, the power switch must be turned off for a short period and then turned on to re-establish power.
Switching frequency is determined by time constant of C934.

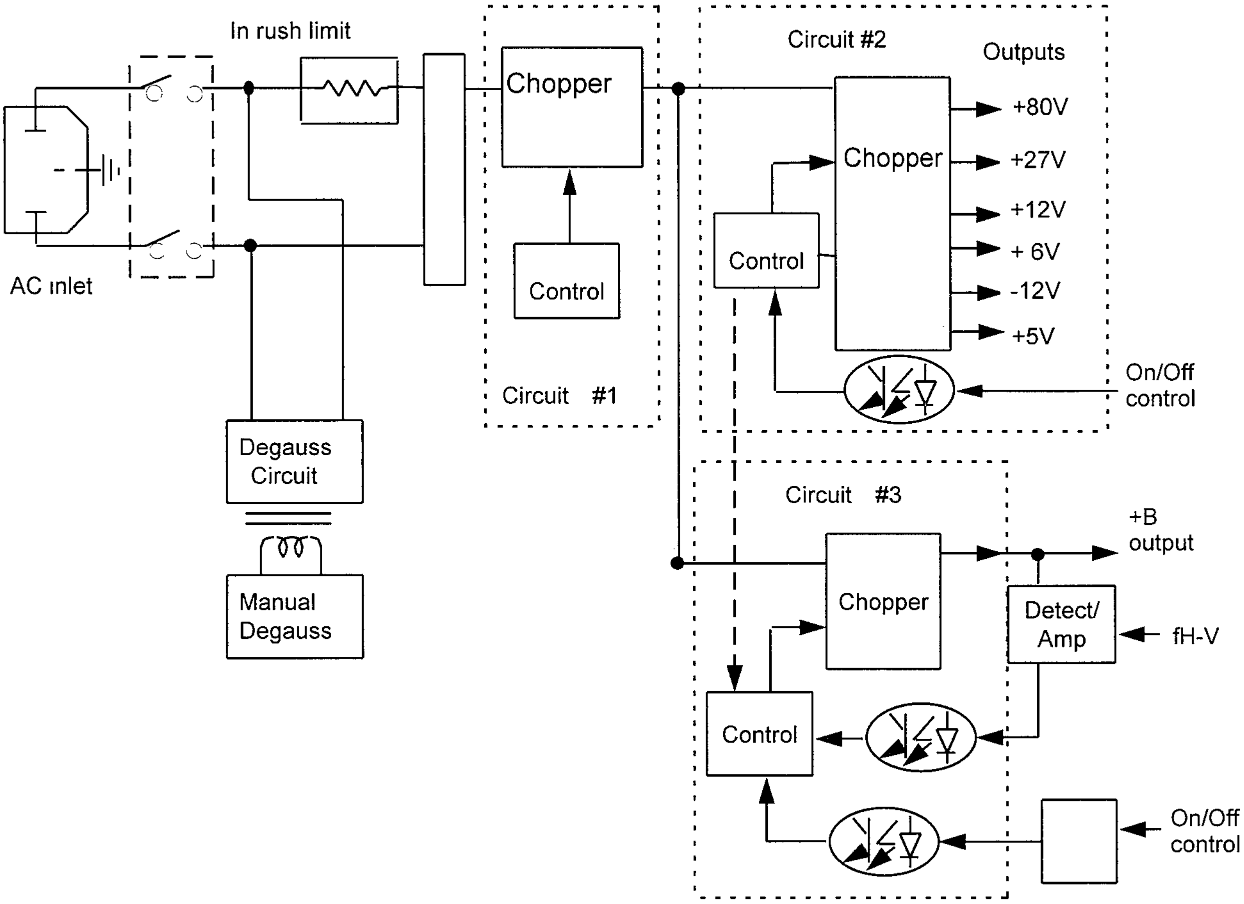
1.3.2 Circuit #3 :

Circuit 3 consists of chopper transformer (T920) and chopper component (Q920) mainly providing +B voltage for horizontal deflection and high voltage circuits. Regulator method is to detect secondary voltage at I971 and feed through photocoupler I923, providing constant voltage by controlling I921 pin 2 at primary circuit. Switching operation is performed by frequency synchronization with circuit #2, to control I921 pin 7 from circuit #2.
As mentioned above, while detecting secondary voltage at I971 I971 simultaneously receives voltage information from microprocessor which is proportional to the horizontal frequency. Therefore, output of circuit #3 is additionally regulated by the horizontal frequency. In this circuit, gate circuit (Q972, Q973) controls the switching operation at power control (I921) through photocoupler (I922).
This circuit is designed to receive power off command from the microprocessor, resulting in stopping chopper operation at the power supply.

1.4 Degaussing circuit

When the power is switched on, the CRT is degaussed automatically by current flowing through the degauss circuit while the relay (S91R) is closed. Degaussing current flows for approximately 20 seconds and stops after secondary circuit operation is stabilized causing relay (S91R) to be opened.
The circuit also allows for manual degauss by user switch at front panel which closes S91R through Q999, to allow current to flow through the degauss coil.

Figure 1 : Block diagram for power supply circuit



2. Sync Determination Circuit

Depending on the combination of Sync signal inputs and its polarity, Sync signal is fed to Sync Processing chip I304 which produces H/V sync. sep at its output.

3. Video Processing Circuit

3.1 Video Processor

The video input signal of 0.7 Vp-p is amplified to approximately 40 Vp-p by the video processing circuit and is fed to the cathode to drive the beam current.
This chassis incorporates a single chip video processor, I201, with three channels, one for each of R/G/B, which functions as the pre-amp of the inputs, OSD mixer and also gain control. A control signal from the microprocessor changes the amplifier gain of the video channels (R/G/B) together with white balance control.

Video Output circuit I202 amplifies R/G/B signals controlled by I201 to the enough level to drive Cathode of CRT DC voltage of Cathode is determined by DC Cut off voltage from Cathode Clamp Circuit. DC Cut off voltage is generated at Level Shift Circuit which consists of I203, whose R/G/B channels are also controlled by microprocessor.

3.2 ACL Circuit

The current at the secondary winding of the flyback transformer is used to represent the CRT beam current. The current is measured and fed to the contrast control I204, D273 to limit the maximum beam current with negative feedback.

3.3 Blanking Circuit

Video blanking durling the beam retrace period is achieved by applying both horizontal and vertical blanking pulses to I201.

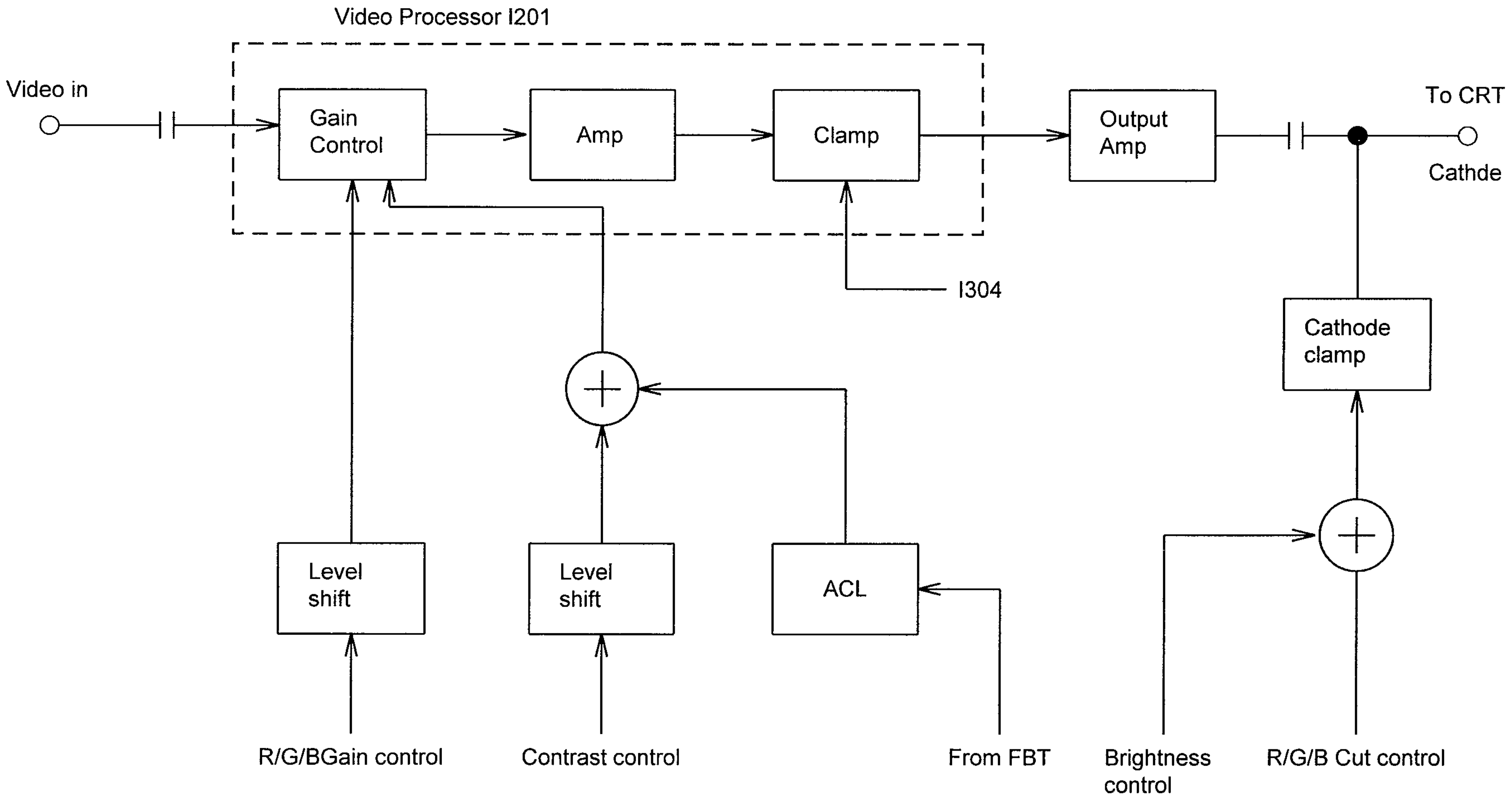
3.4 Precedence of Clamp Pulse Circuit

Clamp signal in Video Processor I201 receives pulses from I306, Precedence of Clamp pulse circuit. When the monitor receives signals, the input of I306 is Sync pulse from Sync Processing Circuit, I304. Without signals, I306' input is the pulse from Deflection Circuit controlled by microprocessor.

3.5 OSD Circuit

I301, receives H/V pulses from Deflection Circuit and control signal from microprocessor, whose output feeds Clock signals (20MHz ~ 80MHz) synchronized with H pulse and control signals from microprocessor, whose output feeds OSD display signals in R/G/B and OSD blanking signal to OSD Mixer Circuit in I201

Video Process Circuit



4. Horizontal Deflection and High Voltage Regulation Circuit

4.1 Horizontal Deflection Circuit

The purpose of the horizontal deflection circuit is to cause the CRT electron beam to be scanned horizontally by driving a current through the deflection yoke, synchronized by the H sync pulse. The circuit consists of an AFC circuit, made up of an H phase detector and VCO (voltage controlled oscillator), and the deflection output.

The H.sync signal is input to I701 where it is delayed and then input to a phase detector The phase detector (I701) also accepts input from a sawtooth waveform which is provided by the deflection feedback (flyback pulse) through the Q702.The output of the phase detector creates an error voltage between the feedback pulse and the input pulse and is then fed to the VCO after processing by an AFC Filter.

The AFC circuit also receives controller voltage from the microprocessor' s output of the $f_{H\text{-}V}$ signal, to center the free-run frequency within the pull-in range of 31 ~ 93kHz, achieving a wide pull-in range. The output pulse from the VCO is fed to the pre-drive and then output from I701 to the drive buffer Q701/Q702. The pre-drive circuit within I701 is duty cycle controlled by the $f_{H\text{-}VP}$ signal from the microprocessor through a level shifter R719, R721, R722 and R725.

In the case of no Sync signals supplied or excessive frequency change, such as a signal timing change, the microprocessor provides a +B shutdown signal to the power supply and also provides a control signal which determines the +B shutdown period after receiving an input signal again.

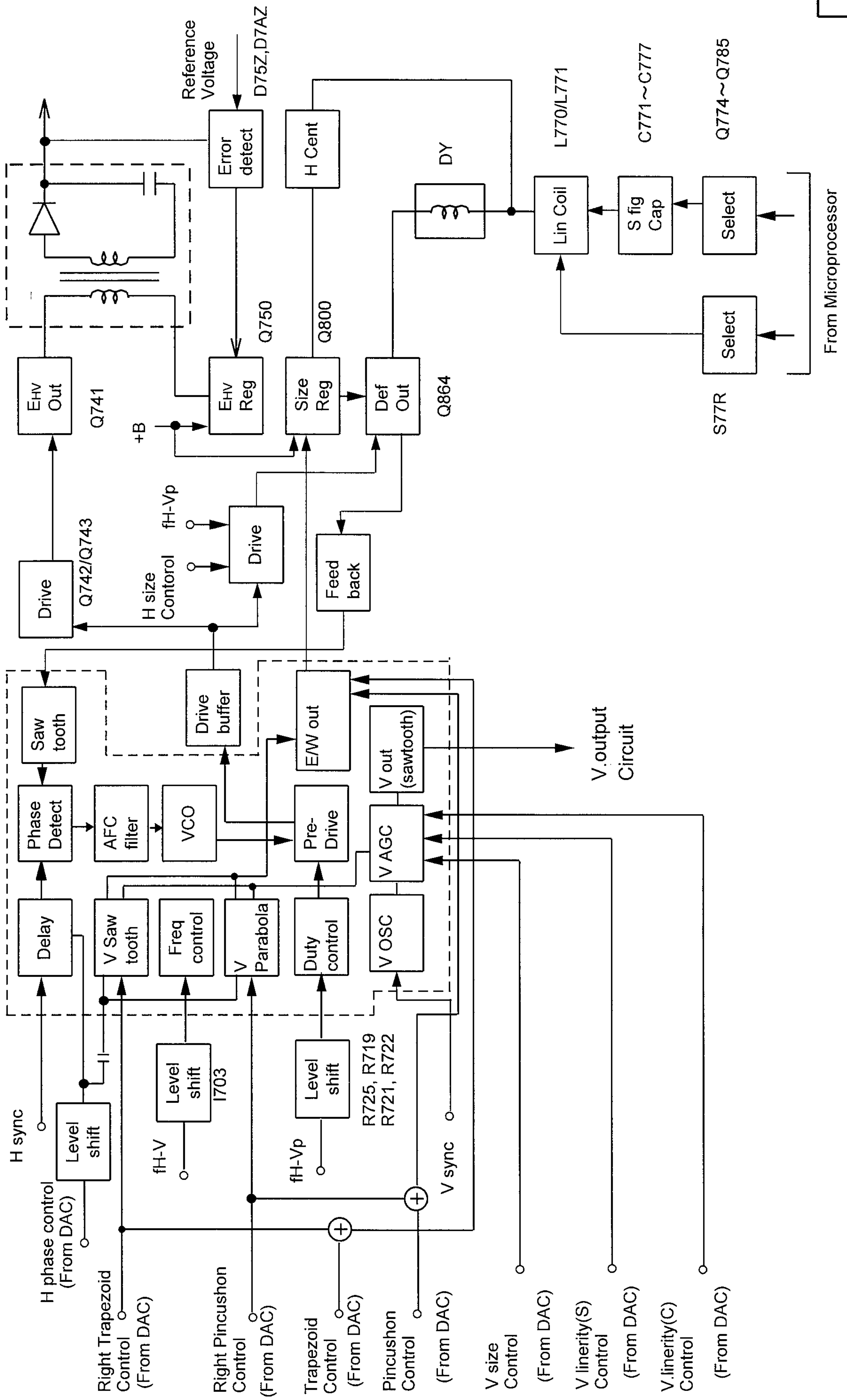
The deflection circuit of the C98A chassis has been separated from the high voltage regulation circuit to provide improved H linearity performance by utilizing the consonant conditions of the horizontal beam current characteristics. The S-consonant capacitors, C771~C777, are changed by Q774~Q785, which provide six stages of consonant conditions. The horizontal linearity coils L770~L771 are changed by S77R to provide two stages of H Linearity conditions.

The power supply paraborically modulates the +B voltage of the deflection circuit, based on the horizontal frequency, to provide a frequency - dependent voltage of between 53.5V and 174V to the deflection circuit.

4.2 High Voltage Regulation Circuit

The output pulse from I701 is also fed to the high voltage regulation circuit with the same design of consonant circuit as the horizontal deflection circuit. High voltage of 27.5kV is obtained by the step-up windings of the flyback transformer to drive the CRT anode. The high voltage is monitored by the E_{HV} error detection circuit. The error detection circuit functions by stepping the high voltage down and comparing it with the reference voltage of D75Z and D7AZ whose output controls Q750, the E_{HV} regulator

Horizontal Deflection Circuit



4.3 Parabolic Waveform Generator Circuit

This circuit generates the parabolic waveform for the purpose of dynamic focus compensation.

4.4 Dynamic focus compensation waveform

Vertical saw tooth signal are input to I505 pin2. Output of pin 4 generates a parabolic waveform with an amplitude proportional to the vertical line frequency, after processing by I505.

Horizontal trigger pulses are input to the PLL (I503, pin 14), the stabilized output of which is then fed to I505 pin 17, through Gate I504. The output of I505 (pin 7) feeds the parabolic waveform, with an amplitude proportional to the horizontal line frequency (after processing by I505), to I501. I501 is a processor which combines horizontal and vertical parabolic output pulses to feed to the dynamic focus drive circuit.

4.5 Dynamic focus drive circuit

This monitor' s CRT includes a dynamic focusing electron gun to achieve sharp and uniform focus throughout the display area. The CRT's Focus anode receives a DC component of approximately 27% of the CRT anode voltage, combined with the AC voltage parabolic waveform of magnitude of 320Vp-p horizontal, and 180Vp-p vertical. DC focus voltage is obtained from a tap of the flyback transformer's bleeder resister, and fed to G3 focus electrode. Horizontal and vertical parabolic output pulses are amplified at Q560~Q563 and fed to the flyback transformer where they are combined with the DC component (27% of anode voltage). The potentiometers (focus 1, focus 2) at the flyback adjust the DC focus voltage. The focus 1 potentiometer mainly adjusts horizontal beam shape (vertical line width), and the focus 2 potentiometer mainly adjusts the vertical beam shape (horizontal line width) by optimizing the DC component of the parabolic waveform.

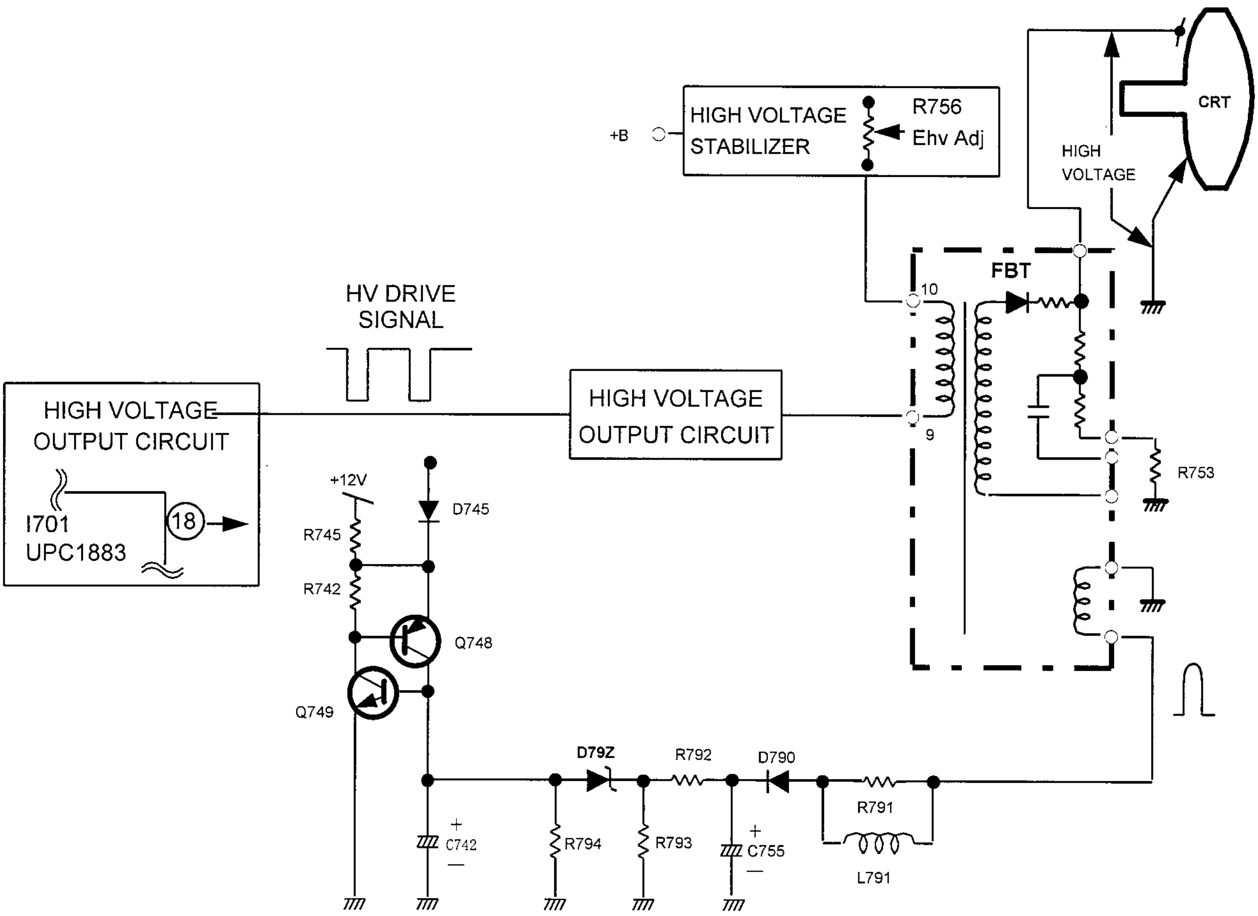
Left and right horizontal focus adjustment is achieved by changing the amplitude of the horizontal parabolic waveform at I505 via horizontal gain at R544. Top and bottom vertical focus adjustment is achieved by changing the amplitude of the vertical parabolic waveform via vertical gain at R543.

4.6High Voltage Hold-Down Circuit

C98A - Chassis uses a system in which an abnormal high voltage is detected to stop the +B voltage, so that the high voltage output will be declined to zero. The detail of the circuit operation is as follows.

When the voltage of D79Z anode which is proportional to the extreme high voltage exceeds the specified threshold voltage which is determined R792, R793, R794, D79Z, Q749 and Q748 are ON, and the HV DRIVE SIGNAL is connected to GND resulted in stopping the HIGH VOLTAGE OUTPUT CIRCUIT and elimination of the extreme high voltage.

HIGH VOLTAGE HOLD-DOWN CIRCUIT DIAGRAM



5. Vertical Deflection Circuit

The purpose of the vertical deflection circuit is to cause the CRT electron beam to be scanned vertically by driving a current through the deflection yoke, synchronized by the V sync pulse. V sync is input to the V oscillator circuit, I701, generating the vertical sawtooth wave. The vertical sawtooth wave is fed to I630 to be amplified of I630 to drive the vertical deflection yoke.

The vertical output stage consist of a DC feed back loop, with feedback of the DC component via the low pass filter, and an AC feedback loop with feedback of the AC component. The AC feedback current gose through feedback circuit where it is used to adjust the time constant.

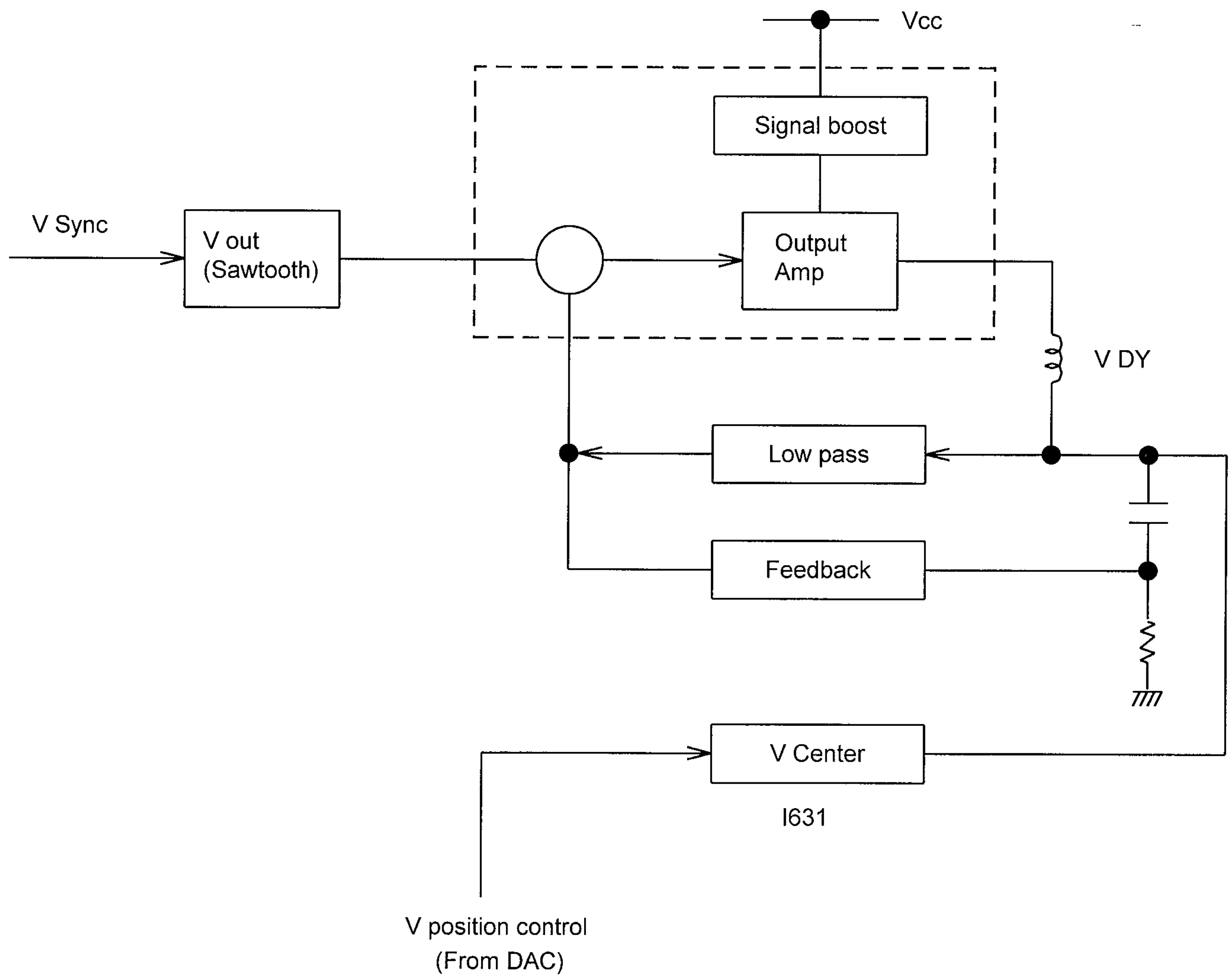
The vertical linerity after signal timing change is constant by fv-v voltage whitch is from microprcessor circuit.

The vertical size control signal from the microprocessor controls the voltage of I701 8pin through a level shifter R618,R619 and R606.

The output stage of I630 includes a ramp-up circuit with D630 and C635 achieving near doubling of the retrace pulse to minimize retrace time.

The vertical position control signal from the microprocessor is fed to the vertical deflection yoke through a vertical centering circuit of I631 to center the raster.

Vertical Defrection Circuit



6. Microprocessor Circuit

The microprocessor circuit consists of the following four detailed circuits as shown in Figure.

1. Sync detect circuit
2. Front panel key data Input / Output (I/O)
3. Processing and memory
4. Control output

6.1 Sync detect circuit

The sync detect outside the microprocessor determines sync polarity, and feeds the polarity signal, STATE signal and H/V sync to the sync processing circuit within the microprocessor The sync processing circuit detects these inputs, counts frequency, and feeds the polarity signal and frequency count to the Central Processing Unit (CPU).

6.2 Front panel key data Input / Output (I/O)

User input is received by the front panel keys which consists of . six select keys, four data keys (two pairs of+/−key), one Store key

Select keys

1) H. Position / H. Size	4) Right Side Pin / Right Trapezoid
2) V Position / V Size	5) Color Select / Rotation
3) Side Pin / Trapezoid	6) Contrast / Brightness

The H.moire control feature requires the user to press Right Side Pin / Right Trapezoid and Contrast / Brightness front panel keys simultaneously to enter the control mode. Adjustment is then made with +/− keys.

The V.moire control feature requires the user to press Color Select / Rotation and Contrast / Brightness front panel keys simultaneously to enter the control mode. Adjustment is then made with +/- keys.

Red, Green, and Blue color gain control feature requires that the user press the contrast / Brightness button and one of H. Position / H. Size (Red adjust), V Position / V Size (Green adjust), or side Pin / Trapezoid (Blue adjust) keys simultaneously to enter the control mode. Adjustment for the selected color is then made with +/−keys.

The language select feature requires the user to press V.Position / V.Size and Side Pin / Trapezoid front panel keys simultaneously to enter the control mode. Adjustment is then made with +/- keys.

Store key allows current settings (including picture size, geometry, and color setting) to be stored to non-volatile memory The maximum memory capacity is for 26 presets including factory standard settings.

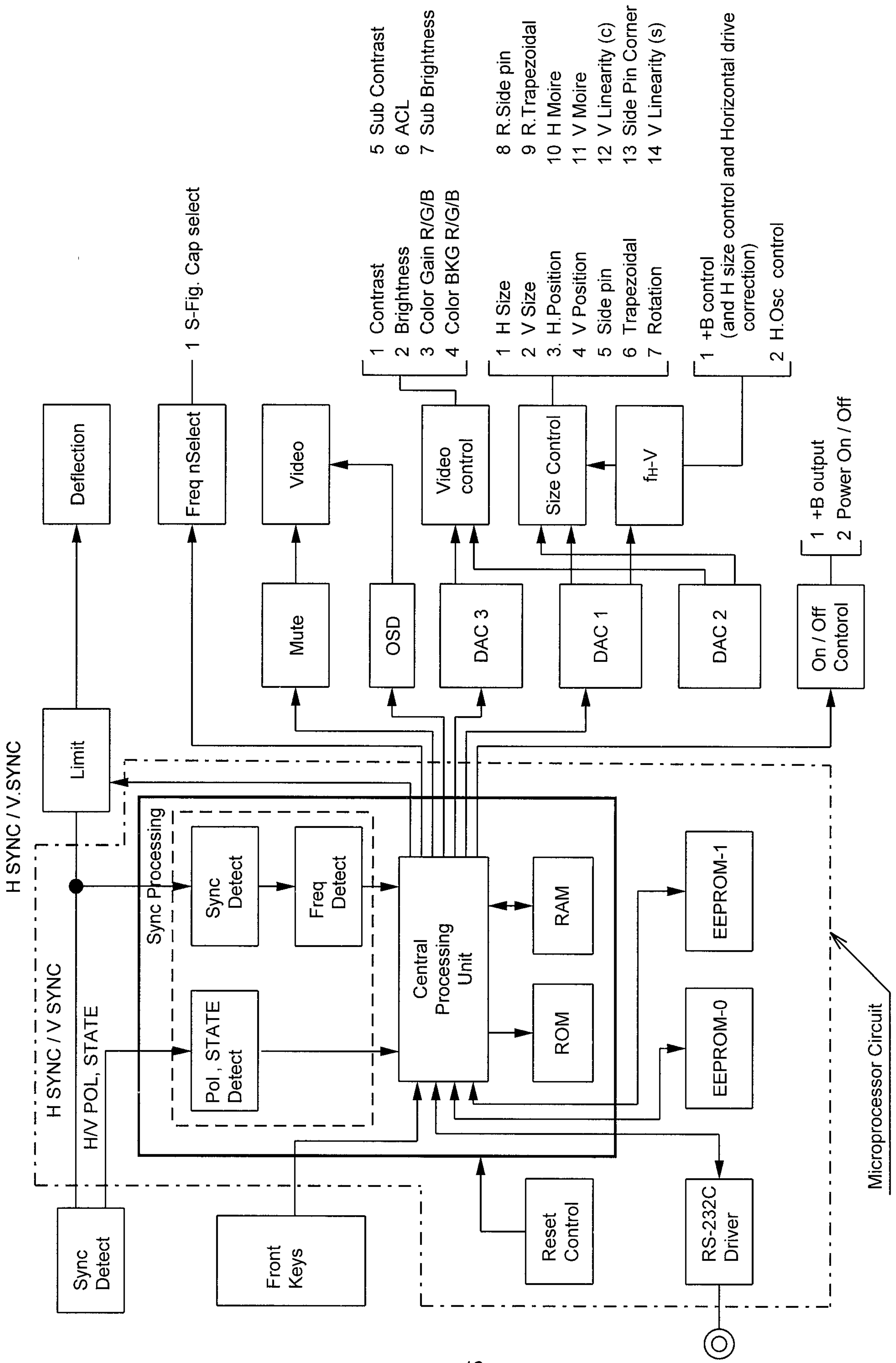
6.3 Processing and memory

I102 is an 8 bit microprocessor which equips with ROM and RAM for system program, and sync processing circuit. Data memory consists of 2 EEPROM chips, I104, I105 for preset data.

6.4 Control output

The microprocessor output controls the DAC, the OSDOn/Off controls, mute circuit, and limit circuit. The input control signal to the DAC, I001, I002 I051, is fed to video control (Contrast, Brightness, R/G/B color gain, R/G/B color BKG, sub Contrast, Sub Brightness and ACL), Size control (H/V size, H/V position, side pin correction, trapezoidal correction, rotation, right sidepin correction, right trapezoidal correction, H/V moire control, V.Linearity(S), V.Linearity(C) and Side pin Corner correction), and fH-V selection (+B control and H size control and horizontal drive correction, H. Osc. control with VCO control). The input control signal to the OSD,I301,provides the function that the monitor shows guidance for adjustment on the screen by generating video signal as character pattern and feeding it to the video amplifier On/Off control provides 2 power saving modes by stopping +B output if one of H sync and V sync is not supplied (Standby mode) and by stopping main power supply if both H and V sync are not supplied. The mute circuit brings video output to black level when timing signal changes or the monitor goes into the power saving mode. The limit circuit consists of a gate, I704 and I706. In case that the frequency is normal, CPU opens the gate and H/V sync is fed to the deflection circuit via the gate. If not, CPU closes the gate to prevent the deflection circuit oscillating at illegal frequency.

This chassis is capable of communicating with a PC through an RS-232C serial communication port for factory adjustments, by making access to the microprocessor through the RS-232C I/O driver, I107.



H SYNC / V.SYNC
Deflection
Limit
Freq nSelect
1 S-Fig. Cap select
Video
Mute
OSD
Video control
DAC 3
1 Contrast
2 Brightness
3 Color Gain R/G/B
4 Color BKG R/G/B
5 Sub Contrast
6 ACL
7 Sub Brightness
Size Control
DAC 1
DAC 2
1 H Size
2 V Size
3. H.Position
4 V Position
5 Side pin
6 Trapezoidal
7 Rotation
8 R.Side pin
9 R.Trapezoidal
10 H Moire
11 V Moire
12 V Linearity (c)
13 Side Pin Corner
14 V Linearity (s)
fH-V
1 +B control (and H size control and Horizontal drive correction)
2 H.Osc control
On / Off Contorol
1 +B output
2 Power On / Off
Sync Processing
Sync Detect
Freq Detect
Pol , STATE Detect
Central Processing Unit
RAM
ROM
EEPROM-1
EEPROM-0
H SYNC / V SYNC
H/V POL, STATE
Sync Detect
Front Keys
Reset Control
RS-232C Driver
Microprocessor Circuit

7. Power Save Function

The C98A chassis is capable of power savings by sensing of the sync input conditions by the microprocessor. The microprocessor can identify two sync conditions, (1) No detection of H.sync, (2) No detection of V sync.

The following table shows the details of the Power save mode.

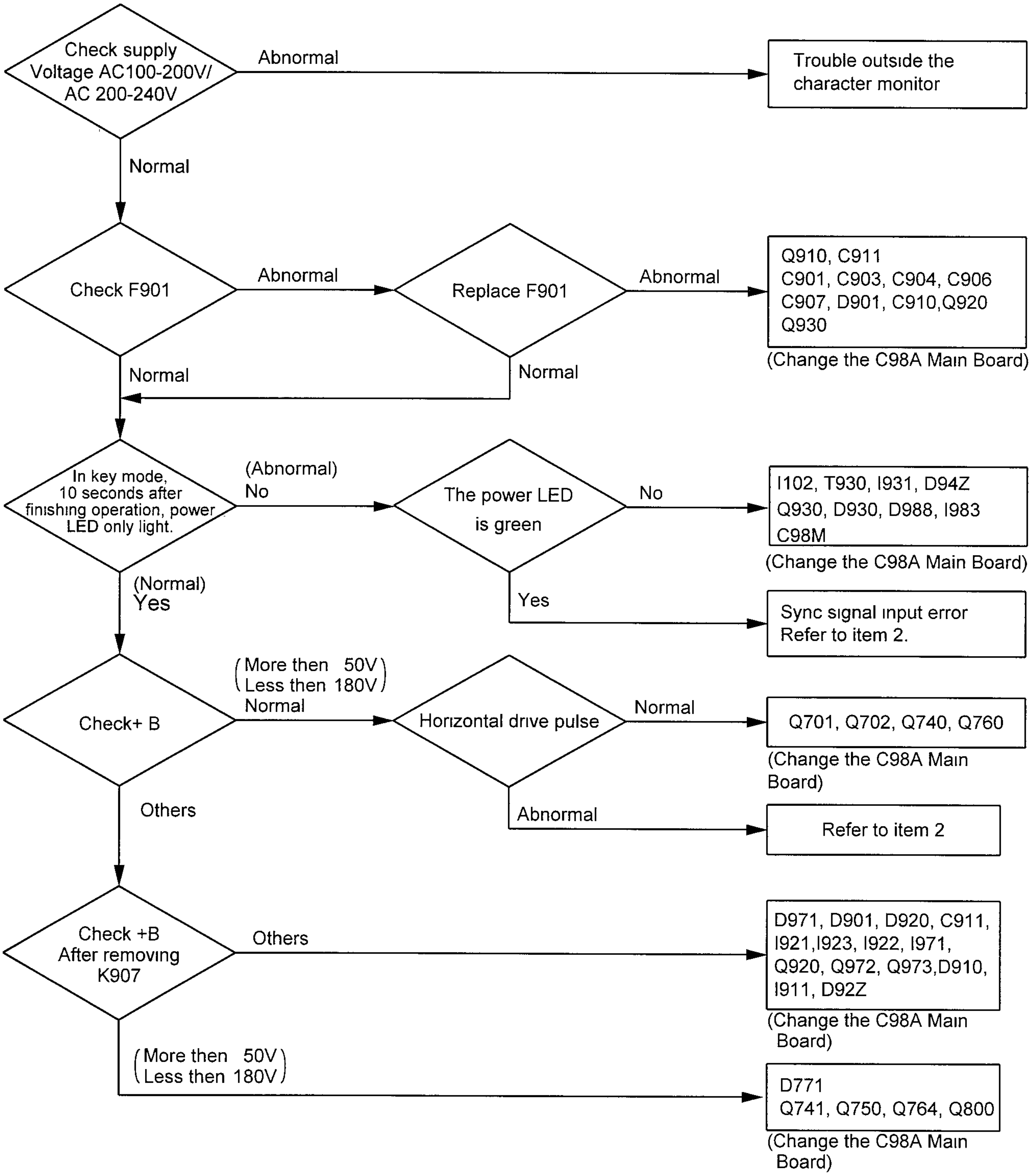
Table : Power Save Function

Sync	H Sync	Yes	No	Yes	No
	V Sync	Yes	Yes	No	No
VESA Standard	Name	Normal	Standby	Standby	Off
	Recovery Time	N/A	Short	Short	System Dependent
	Recovery Time	None	Minimam	Minimam	Maximum
Circuit Operation	H. Deflection	Normal operation	Stop	Stop	Stop
	V Deflection	Normal operation	Stop	Stop	Stop
	Video	Normal operation	Mute		Mute
Power LED		Lighting Green	Flashing quickly	Flashing quickly	Flashing slowly
Power consumption (Typical) · AC (120V)		All White 125W All Black 90W	11W	11W	4W

TROUBLESHOOTING

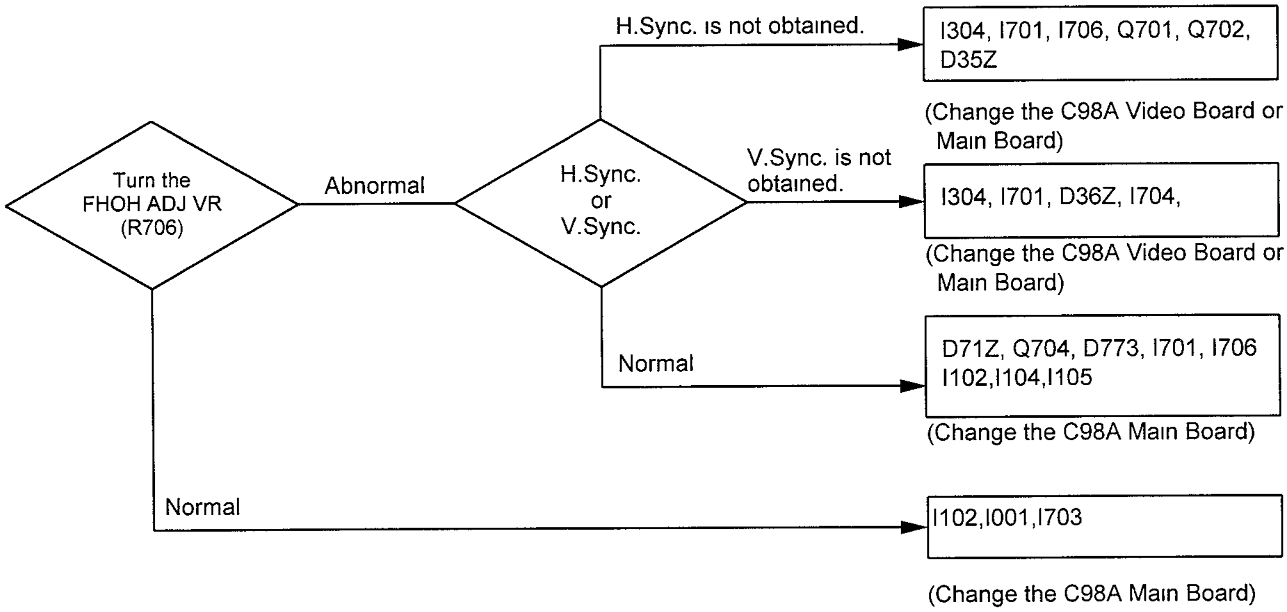
1. RASTER DOES NOT APPEAR

Relevant circuit Power circuit, Horizontal deflection circuit,
High voltage limitter circuit



2. SYNCHRONIZATION IS NOT OBTAINED

Relevant circuit Sync. input circuit, Deflection circuit



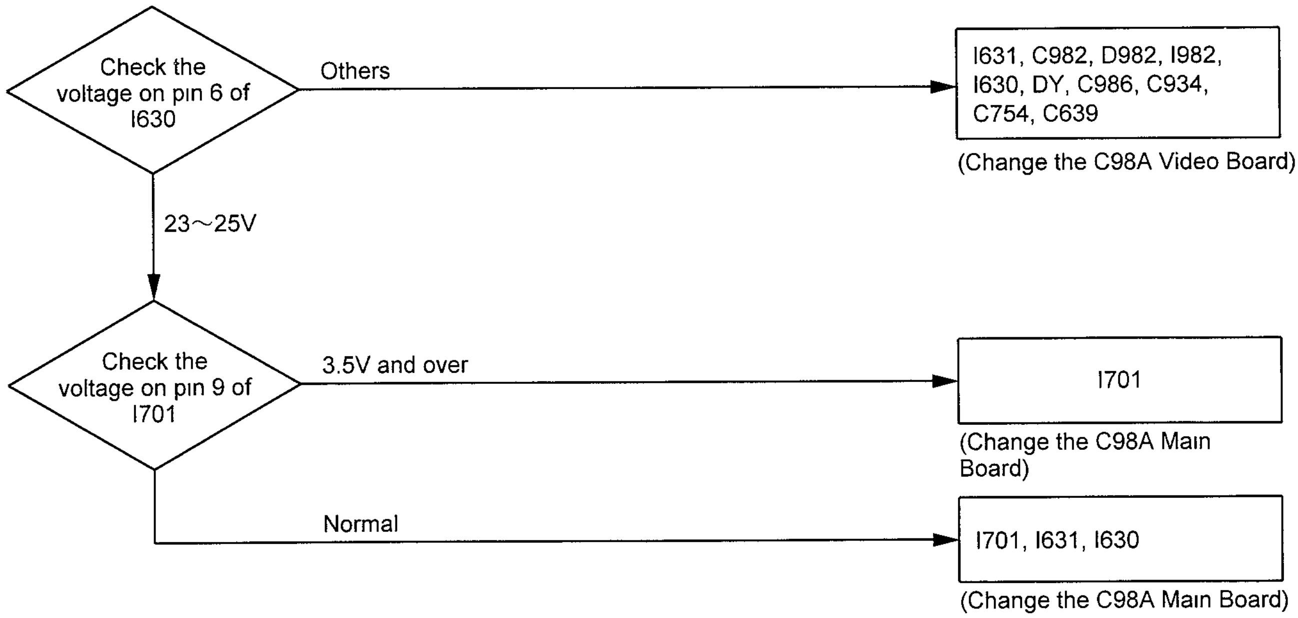
3. VERTICAL SINGLE LINE

Relevant circuit Horizontal output circuit

DY faulty, Q800, D771, Q764, Q760

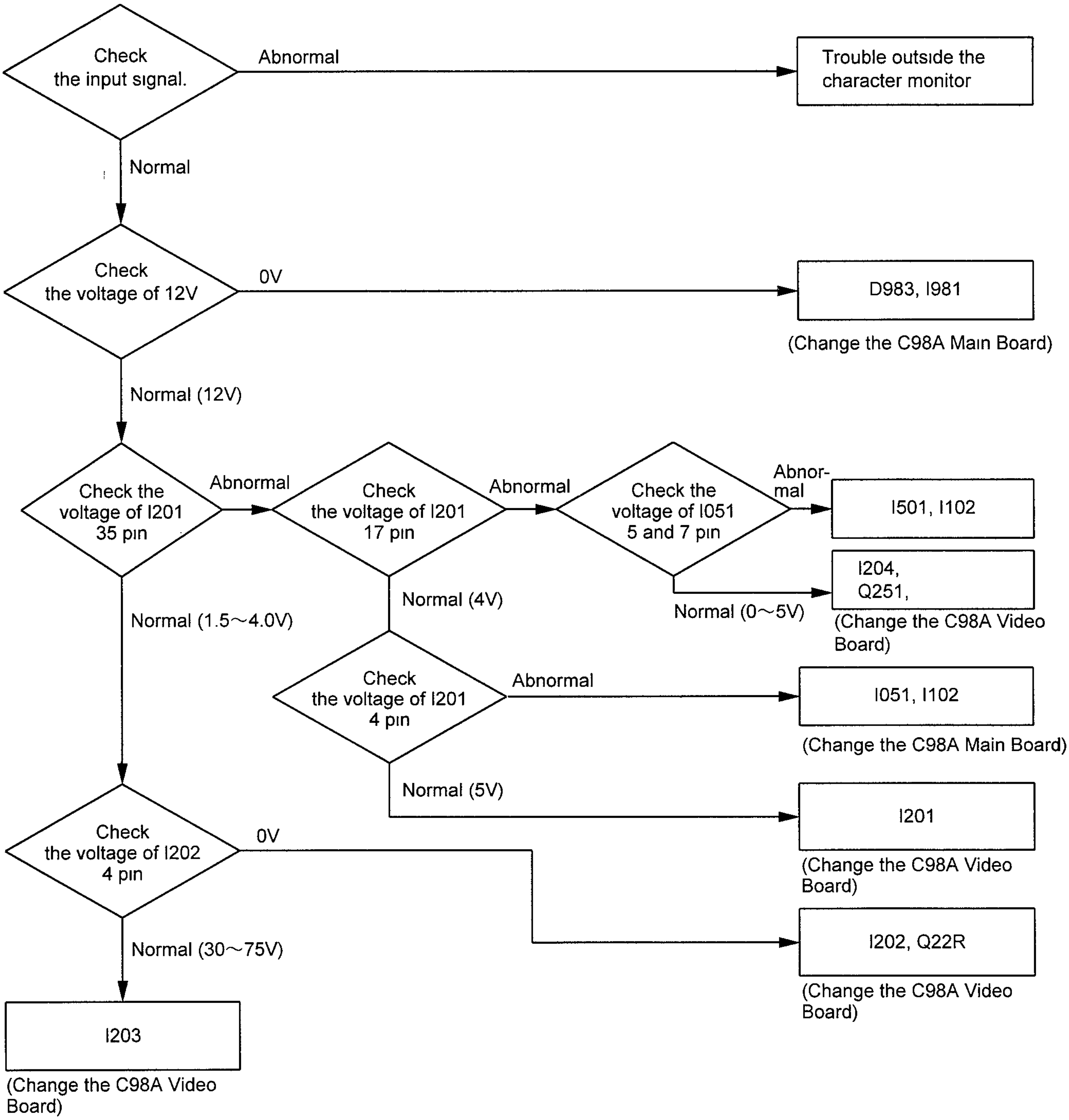
4. HORIZONTAL SINGLE LINE

Relevant circuit Vertical deflection circuit



5. COLOR DOES NOT APPEAR

Relevant circuit . Video amplifier circuit



Note · Troubleble in the red circuit is shown in this diagram as representative color
Refer to . when green does not appear, and when blue does not appear

ADJUSTMENTS

1. Power supply

1.1 PFC output voltage adjustment.

(1) Turn the switch of the unit off.
(2) Place a jumper wire across C922 on main-p.w.b to disable + B output voltage.
(3) Turn the switch of the unit on.
(4) Receive normal cross hatch pattern of signal 94A.
(5) Connect a Digital multimeter between + and − of C911
(6) Adjust R916 to 373 ± 2V
(7) Turn the switch of the unit off.
(8) Remove the jumper wire from C922.

1.2 Sub-power supply voltage adjustment.

(1) Turn the switch of the unit off.
(2) Place a jumper wire across C922 on main-p.w.b to disable + B output voltage.
(3) Turn the switch of the unit on.
(4) Receive reverse cross hatch pattern of signal 94A.
(5) Connect a Digital multimeter between + and - of C984.
(6) Adjust voltage to 12.7 ± 0.05V using R938.
(7) Turn the switch of the unit off.
(8) Remove the jumper wire from C922.

1.3 +B voltage adjustment

(1) Turn the switch of the unit off.
(2) Adjusting horizontal free running frequency must be finished before this adjustment.
(3) Receive a normal cross hatch signal.(See table 1.for proper signal timing)
(4) Connect a Digital volt meter between Q800 collector(or R807 on the side of Q800)and GND.
(5) Turn the switch of the unit on.
(6) Adjust R973 to the proper +B voltage value as outlined in table 1
(7) Receive reverse cross hatch pattern of signal 30C and check the +B voltage is at 53.5 ± 2.0V

Table 1

Model	signal	+B voltage
CM751	94A	156±1.0V

2. Deflection circuit adjustment

2.1 Horizontal free running frequency and Horizontal drive pluse duty adjustment

(1) Turn the switch of the unit off.

(2) Place a jumper wire across C922 on main-p.w.b to disable +B output voltage.

(3) Connect a 1 Kohm resister between R700 (Q701 side) and D71Z's cathode.

(4) Place a jumpwer wire between I701 26pin and GND.

(5) Connect frequency counter between R700 (Q701 side) and GND

(6) Turn the switch of the unit on.

(7) Receive the signal, as indicate on table 2, for frequency Horizontal high(fHH), and adjust R706 to the value indicated on table 2.

(8) Receive the signal 30W for fHLL and check the fHOL in table 2.

(9) Connect a oscilloscope's probe (10:1) to Q760's drain.

(10) Ajust tHD to table 2 using R717

(11)Turn the switch of the unit off

(12) Remove the adjustment jig.

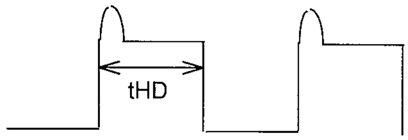


Table 2

			R717		R724	
	fHLL	fHOL	fHLL	tHD	fHH	fHOH
CM751	30W	30.0±0.7kHz	30W	19.8±0.2 μ s	94A	93.75±0.1kHz

2.2 High voltage adjustment

(1) Turn the switch of the unit off.

(2) Connect a high voltage meter, whitch is capable to measure up to 40kV, between CDT anode and GND

(3) Receive normal cross hatch pattern of 94A signal.

(4) Turn the switch of the unit on.

(5) Adjust high voltage level to 27.5 ± 0.3kV using R756.

(6) Turn the switch of the unit off.

(7) Remove the adjustment jig.

3. Video Circuit

Prior to the video circuit adjustment, all Sync.And Deflection circuit adjustment must be completed. The monitor must have been warmed up for more than 60 minutes. Video signal must be terminated with 75Ω and should provide the correct voltage at the monitor end.
[Pre-setting before adjustment]

Function	Pin No.	Output Voltage
R Color	#9 pin (I051)	5V (FF)
G Color	#6 pin (I051)	5V (FF)
B.Color	#8 pin (I051)	5V (FF)
Contrast	#7 pin (I051)	5V (FF)
Brightness	#4 pin (I051)	0V (FF)
Sub Brightness	#8 pin (I002)	2.5V (7F)
Sub Contrast	#5 pin (I051)	2.5V (7F)
R.BKG	#15 pin (I051)	5V (00)
G.BKG	#14 pin (I051)	5V (00)
B.BKG	#16 pin (I051)	5V (00)
ACL	#17 pin (I051)	2.5V (7F)

* Output voltages of DAC

Note 1) Color Analyzer Minolta CA 100 or equivalent.

3.1 Cut off adjustment

(1) Receive a signal of 94A with a blank signal pattem.(Black video)

(2) Connect a high impedance voltmeter (more than 1000MΩ) to the Screen terminal (G2) on the CRT neck board.
Adjust the Screen voltage pot on FBT to see 500 ± 10V

(3) Adjust R,G & B,BKG to show the CIE coordinate of
X=0.313±0.03, Y=0.329±0.03 at 1.2 cd/m2 (0.35ft-L).
If it looks difficult to obtain X and Y readings mentioned above, do the followings to obtain these numbers.

1) Reset Sub Brightness to 1.9V (9F) or 3.1V (60).

2) Reset Sub Brightness to 0.93V (CF) or 4.1V (30).

3) Reset G2 to 450V or 550V

3.2 White balance adjustment (Color 2)

(1) Receive a signal of 94A with a 100×100mm window pattern.
(2) Set Brightness Control to the center (2.5V 7F).
(3) Adjust the light output to 80 cd/m2 (23ft-L) at the center of screen by adjusting Sub Contrast Control.
(4) Adjust the white balance of high light output by Green and Blue color adjustments to read CIE coordinate of X=0.313 ± 0.008, Y=0.329 ± 0.008.
(5) Adjust Contrast Control to read 3 cd/m2 (1 ft-L).
(6) Adjust Red and Blue BKG to read the same CIE coordinate shown in 3.2.(4)
(7) Adjust Contrast Control to read 80 cd/m2 (23ft-L) and then confirm CIE coordinate. If it shown out range, go back to 3.2(4)
(8) Register the readings of R/G/B BKG and Color data (Color 2) to the microprocessor

3.3 White balance adjustment (Color 1)

(1) Receive a signal of 94A with a 100×100mm window pattern.
(2) Set brightness Control to the center (2.5V 7F).
(3) Adjust the light output to 80 cd/m2 (23ft-L) at the center of screen by adjusting Sub Contrast Control in Color 2 mode.
(4) Select "Color Select" to Color 1
(5) Adjust the white balance of high light output by Green and Blue color adjustments to read CIE coordinate of X=0.283 ± 0.008, Y=0.298 ± 0.008
(6) Register the readings of Color dada (Color 1) to the microprocessor

3.4 White balance adjustment (Color 3)

(1) Receive a signal of 94A with a 100×100mm window pattern.
(2) Set Brightness Control to the center (2.5V 7F).
(3) Adjust the light output to 80 cd/m2 (23ft-L) at the center of screen by adjusting Sub Contrast Control in Color 2 mode.
(4) Select "Color Select" to color 3.
(5) Set Green color data 48digit lower than Green color data of Color 2.
(6) Adjust the white balance of high light output by Red and Blue color adjustments to read CIE coordinate of X=0.336 ±0.008, Y=0.352±0.008.
(7) Register the readings of Color data (Color 3) to the microprocessor.

3.5 Brightness adjustment

(1) White balance adjustment must have been done before Brightness adjustment.
(2) Receive signal of 94A with a blank signal pattem.(Black video)
(3) Set Brightness and Contrast Control to their maximums.
(4) Ambient light on the surface of the CRT should show lower than 50 lux.
(5) Select "Color Select" to Color 1
(6) Adjust the light output to 1.2 cd/m2 (0.35 ft-L) at the center of screen by adjusting Sub Brightness Control.
(7) Receive a signal or 94A with a window pattem (100 × 100 mm)
(8) Adjust the light output to 143 cd/m2 (42 ft-L) at the center of screen by adjusting Sub Contrast Control.
(9) Receive a signal of or 94A with a full white patterm.
(10) Set R/G/B color to the maximum (5V , FF)
(11) Adjust the light output to 120 cd/m2 (35ft-L) at the center of screen by adjusting ACL adjustment.
(12) Register the readings of Sub Brightness, Sub Contrast and ACL to the microprocessor

4.1 Focus adjustment

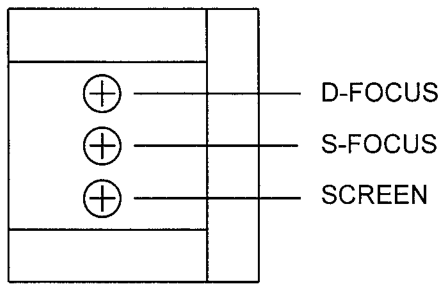
(1) Receive signal 94A with a full screen "E" characters.

(2) Set user Contrast control to its maximum.

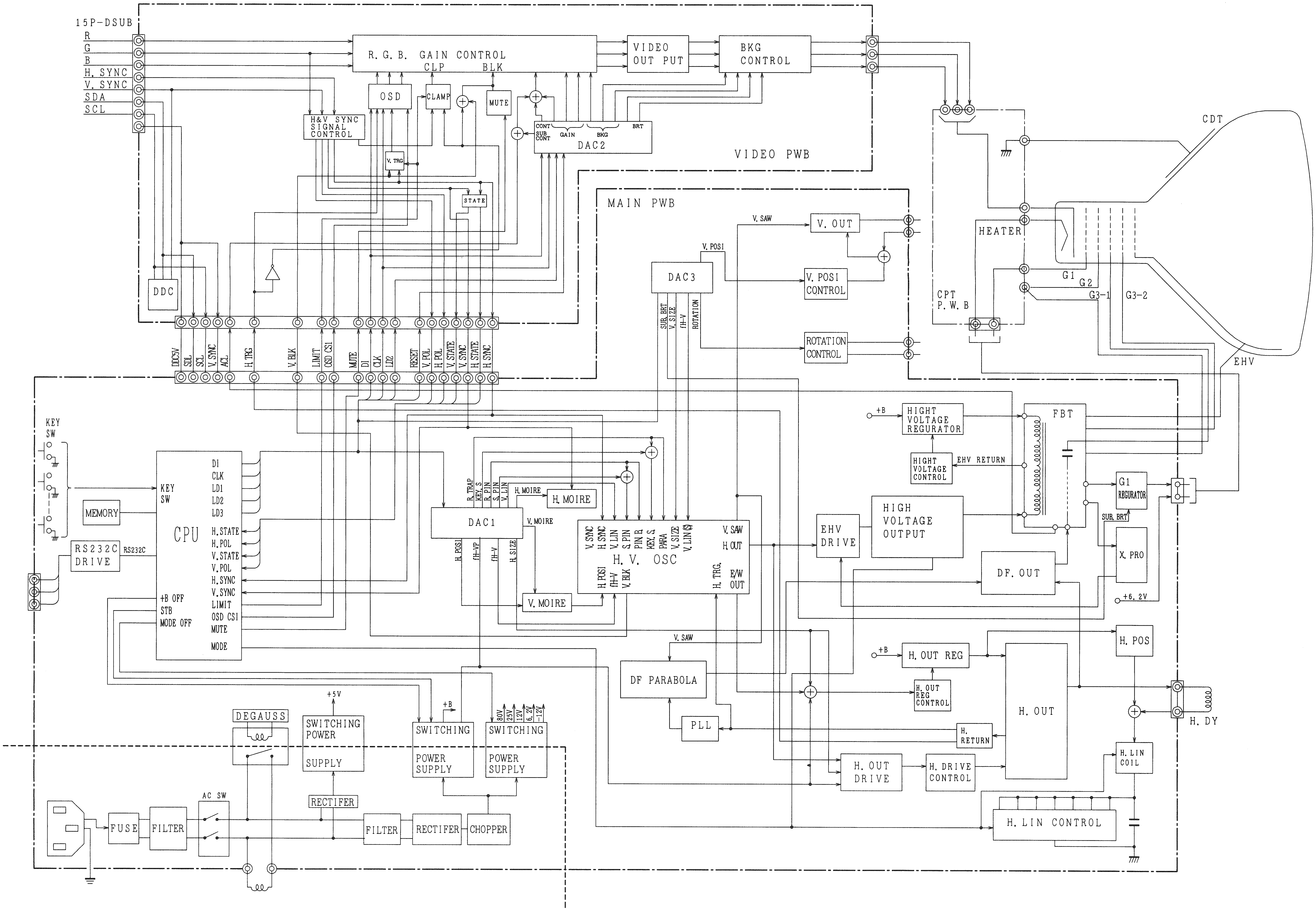
(3) Set user Brightness control so that the back ground raster is just diminished.

(4) Adjust S-Focus control on the FBT so that focus at the middle points between the center of the screen to its best.

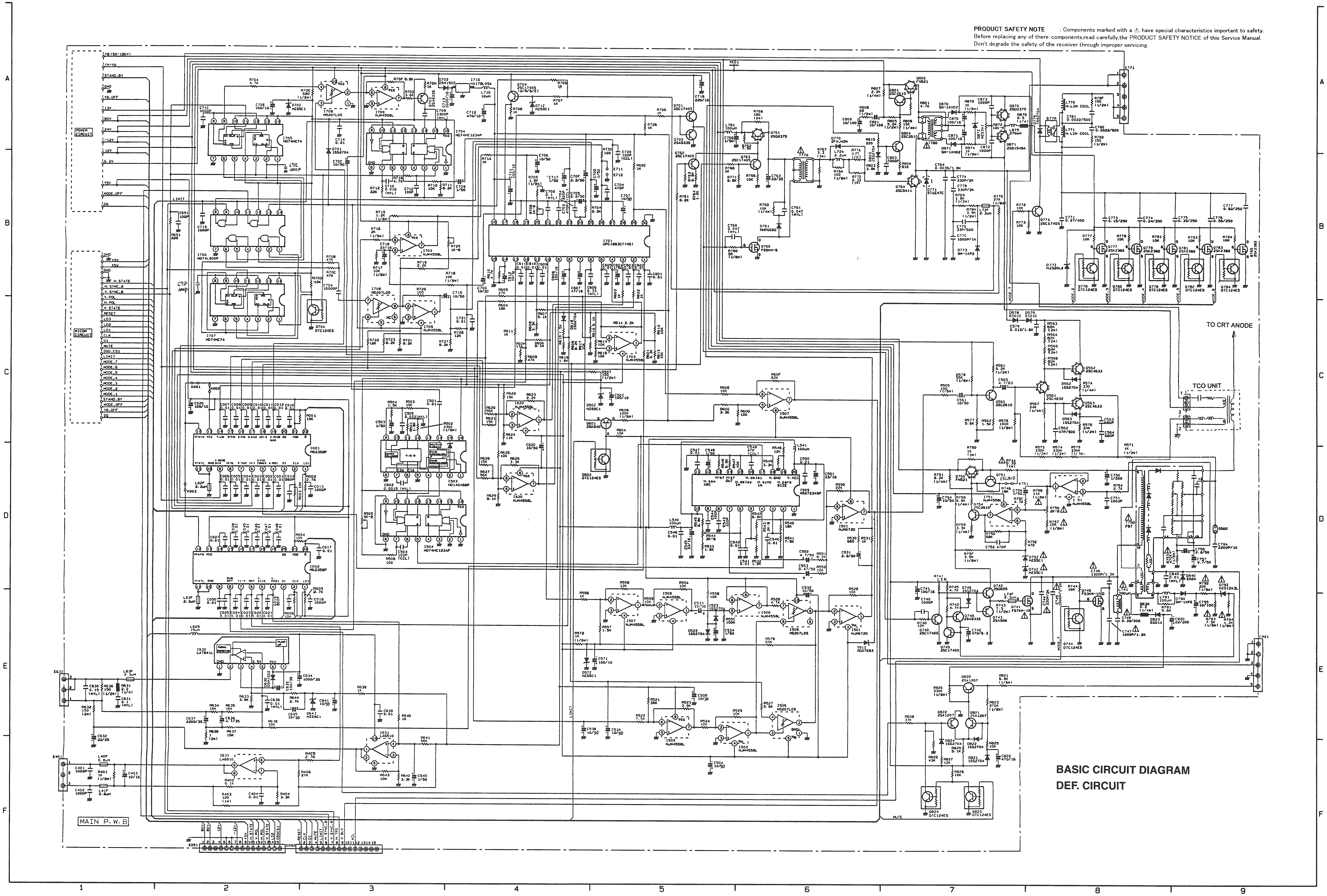
(5) Adjust D-Focus control on the FBT so that focus at four corners of the screen to its best.



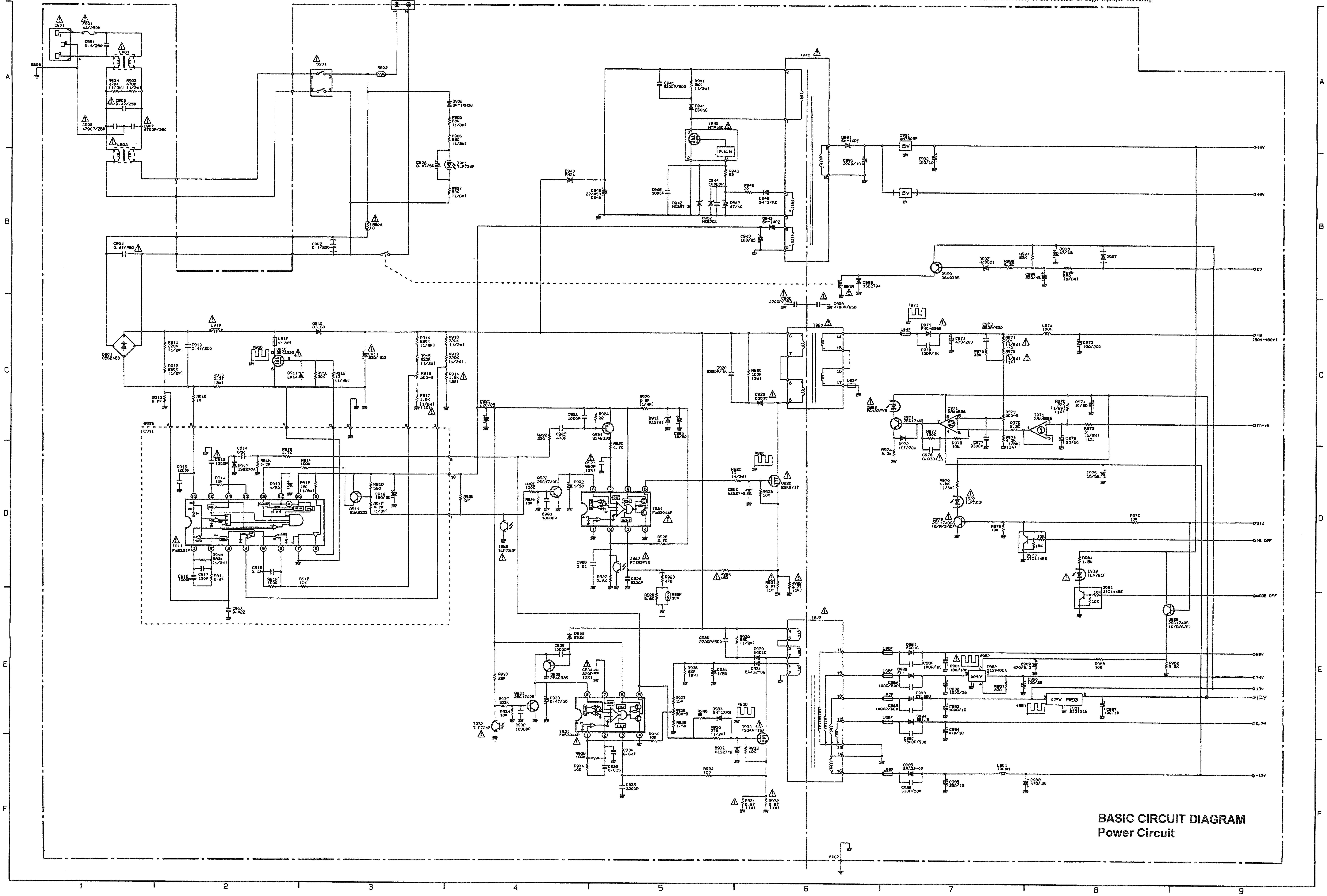
Position of FBT Controls


15P-DSUB
R
G
B
H. SYNC
V. SYNC
SDA
SCL
R. G. B. GAIN CONTROL
CLP
BLK
VIDEO OUT PUT
BKG CONTROL
OSD
CLAMP
MUTE
H&V SYNC SIGNAL CONTROL
V. TRG
STATE
CONT
SUB CONT
GAIN
BKG
BRT
DAC2
VIDEO PWB
DDC
CDT
MAIN PWB
V. SAW
V. OUT
V. POSI
DAC3
V. POSI CONTROL
SUB. BRT
V. SIZE
fH-V
ROTATION
ROTATION CONTROL
HEATER
G1
G2
G3-1
G3-2
CPT P. W. B
EHV
DDC5V
SDL
SCL
V. SYNC
ACL
H. TRG
V. BLK
LIMIT
OSD CS1
MUTE
DI
CLK
LD2
RESET
V. POL
H. POL
V. STATE
V. SYNC
H. STATE
H. SYNC
KEY SW
MEMORY
CPU
KEY SW
DI
CLK
LD1
LD2
LD3
H. STATE
H. POL
V. STATE
V. POL
H. SYNC
V. SYNC
LIMIT
OSD CS1
MUTE
MODE
+B OFF
STB
MODE OFF
RS232C DRIVE
RS232C
R. TRAP
KEY. S
R. PIN
S. PIN
V. LIN
H. MOIRE
H. MOIRE
DAC1
V. MOIRE
H. POSI
fH-VP
fH-V
H. SIZE
V. MOIRE
V. SYNC
H. SYNC
V. LIN
S. PIN
PIN R.
KEY. S
PARA
V. SIZE
V. LIN (S)
H. V. OSC
V. SAW
H OUT
H. POSI
fH-V
V. BLK
H. TRG.
E/W OUT
+B
HIGHT VOLTAGE REGURATOR
HIGHT VOLTAGE CONTROL
EHV RETURN
FBT
EHV DRIVE
HIGH VOLTAGE OUTPUT
G1 REGURATOR
SUB. BRT
X. PRO
DF. OUT
+6. 2V
V. SAW
DF PARABOLA
PLL
H. OUT REG
H. OUT REG CONTROL
H. POS
H. OUT
H. RETURN
H. DY
H. LIN COIL
H. OUT DRIVE
H. DRIVE CONTROL
H. LIN CONTROL
+5V
DEGAUSS
SWITCHING POWER SUPPLY
SWITCHING POWER SUPPLY
SWITCHING POWER SUPPLY
80V
25V
12V
6. 2V
-12V
RECTIFER
AC SW
FUSE
FILTER
FILTER
RECTIFER
CHOPPER

BASIC CIRCUIT DIAGRAM

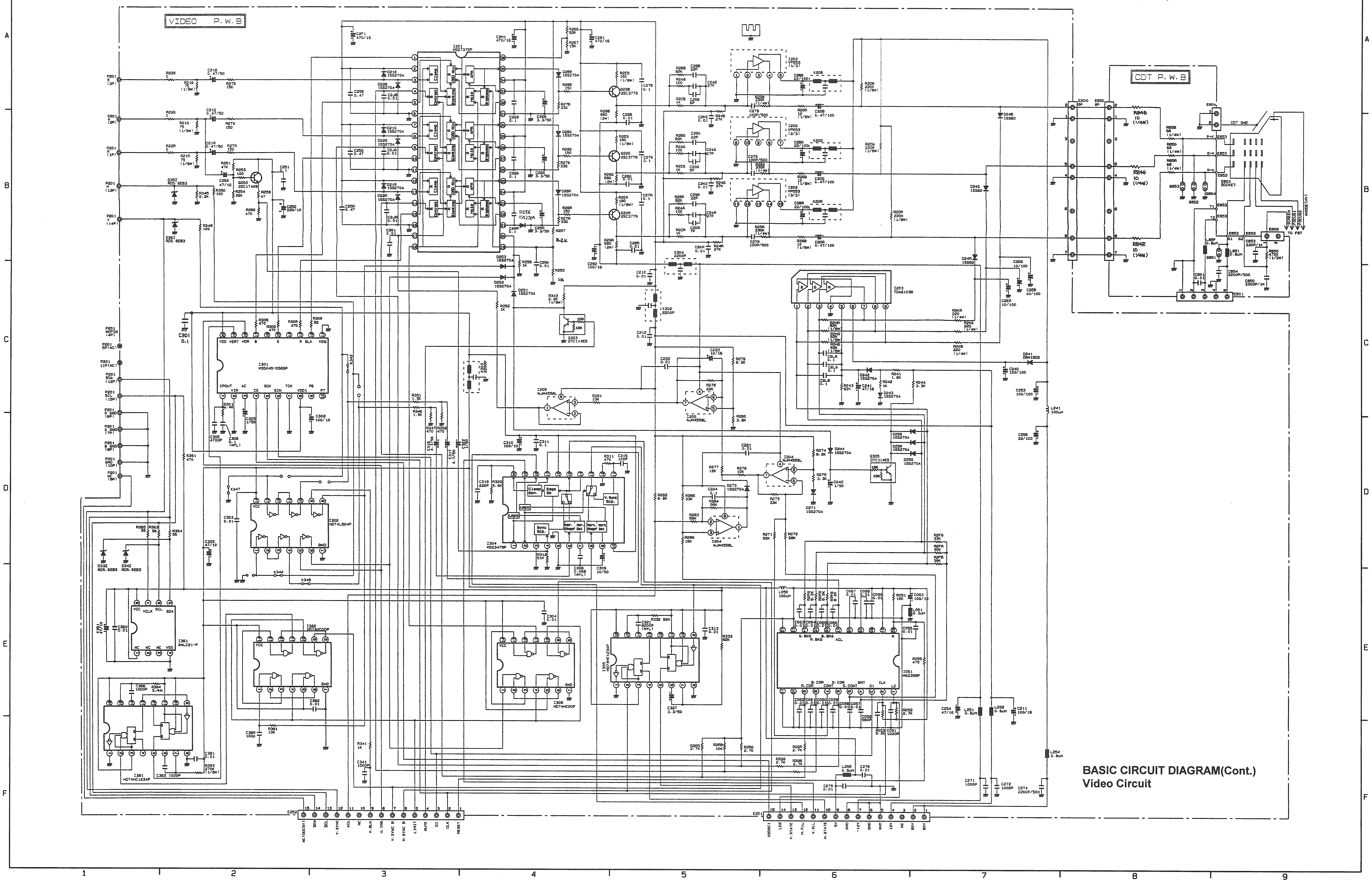


PRODUCT SAFETY NOTE : Components marked with a ⚠ have special characteristics important to safety. Before replacing any of there components,read carefully,the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.



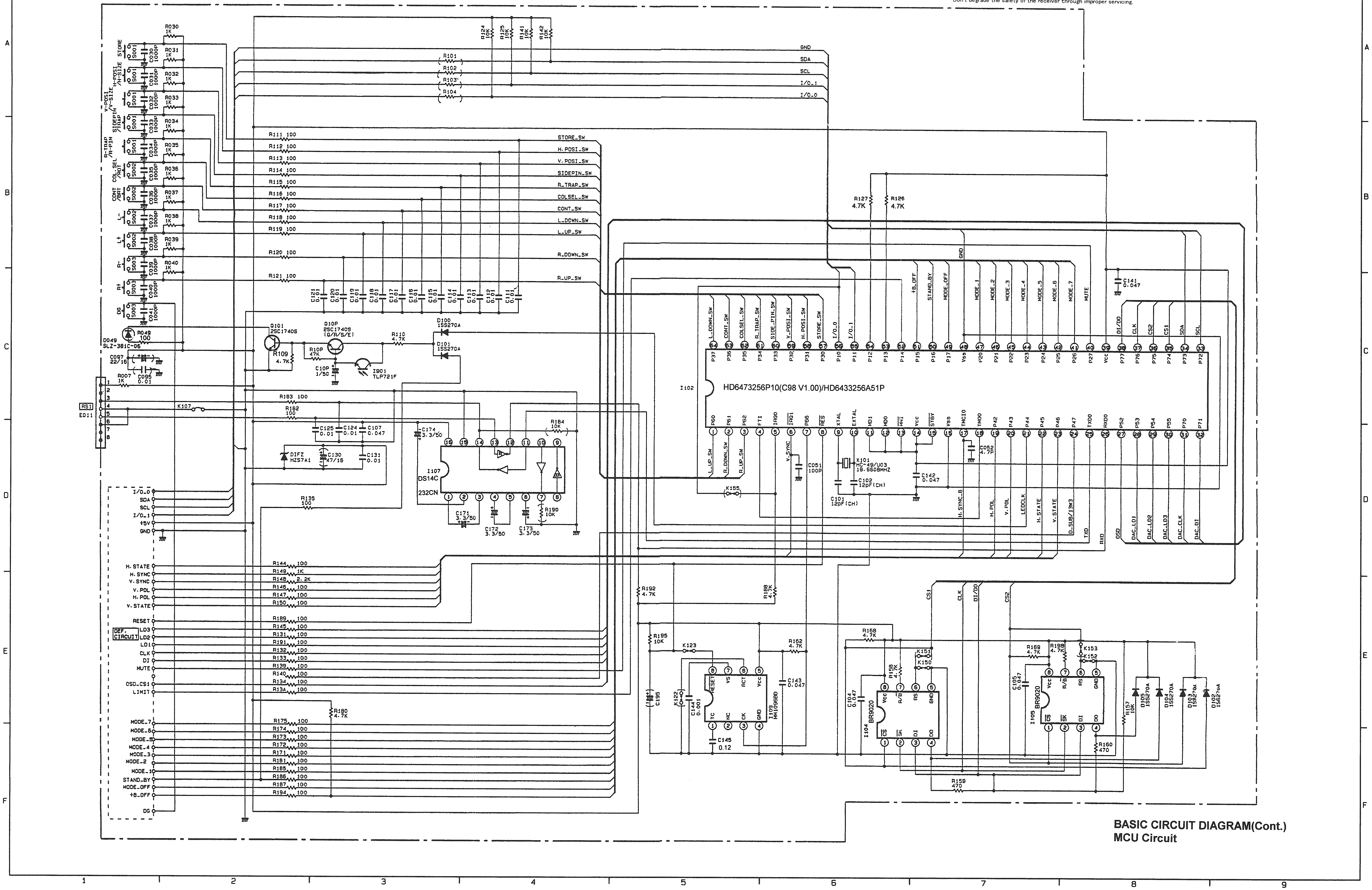
BASIC CIRCUIT DIAGRAM
Power Circuit

PRODUCT SAFETY NOTE : Components marked with a ⚠ have special characteristics important to safety. Before replacing any of there components,read carefully,the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.



BASIC CIRCUIT DIAGRAM(Cont.)
Video Circuit

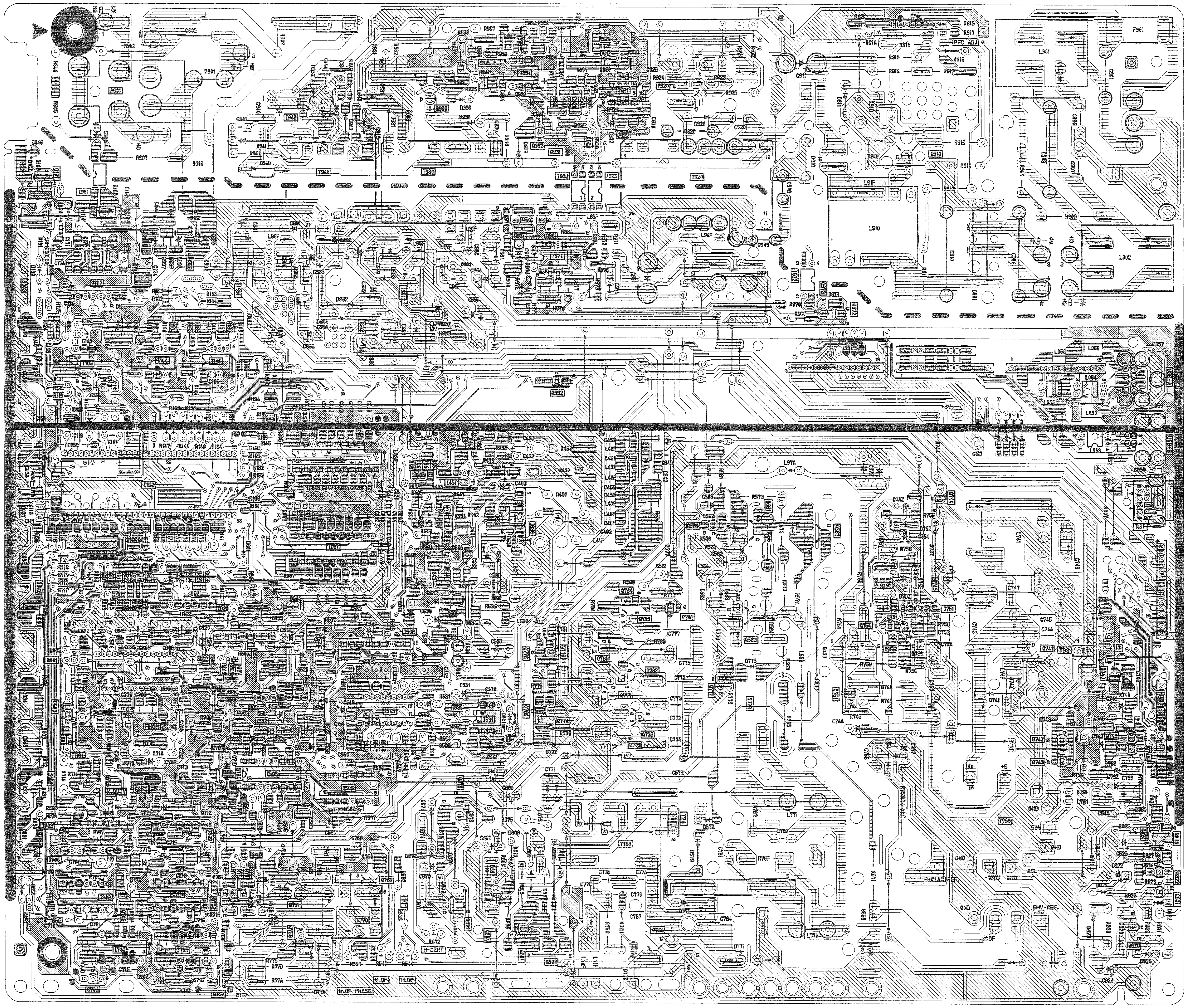
PRODUCT SAFETY NOTE : Components marked with a ⚠ have special characteristics important to safety. Before replacing any of there components,read carefully,the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.



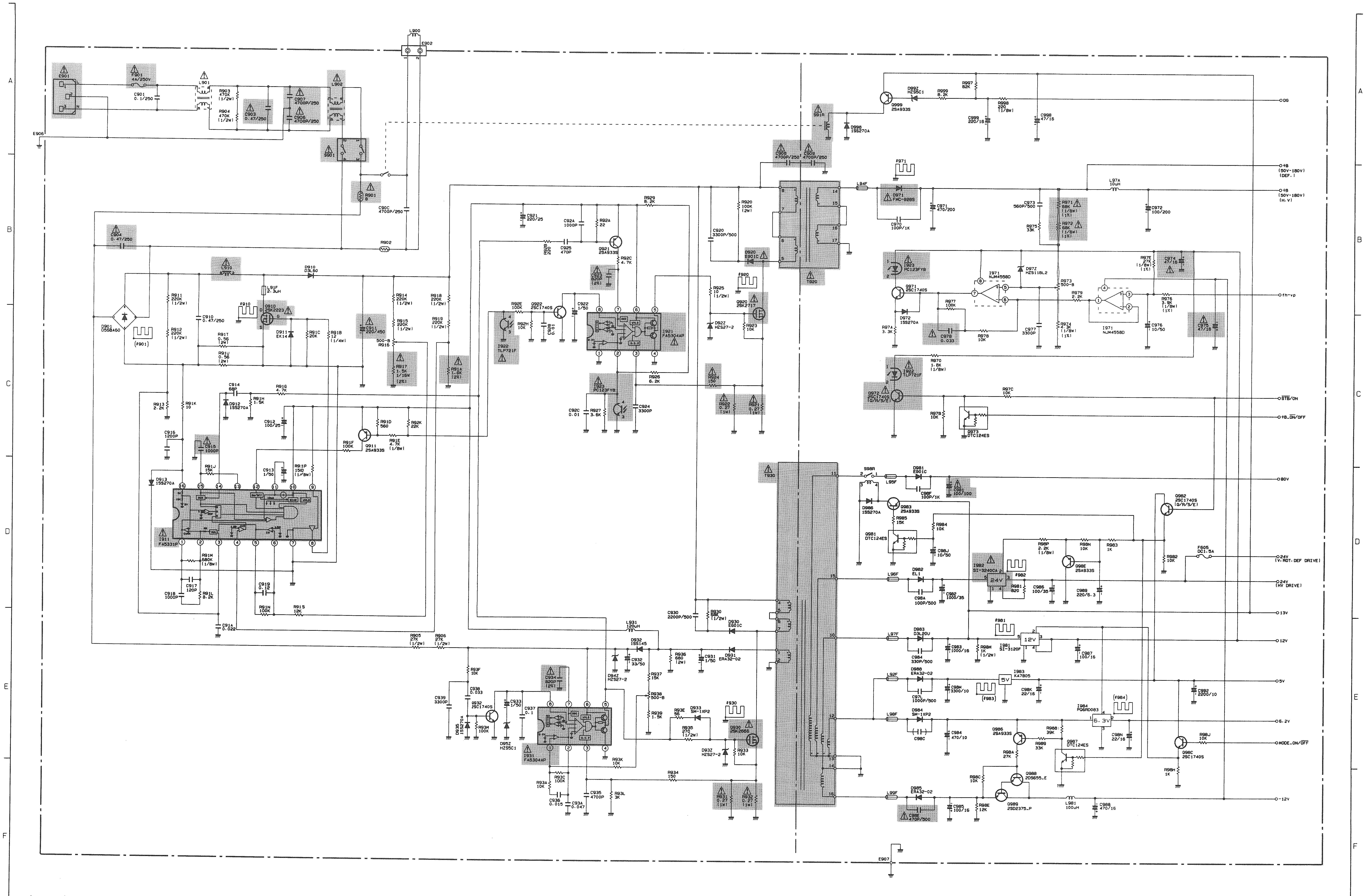
BASIC CIRCUIT DIAGRAM(Cont.)
MCU Circuit

PRINTED WIRING BOARD

MAIN P.W.B.



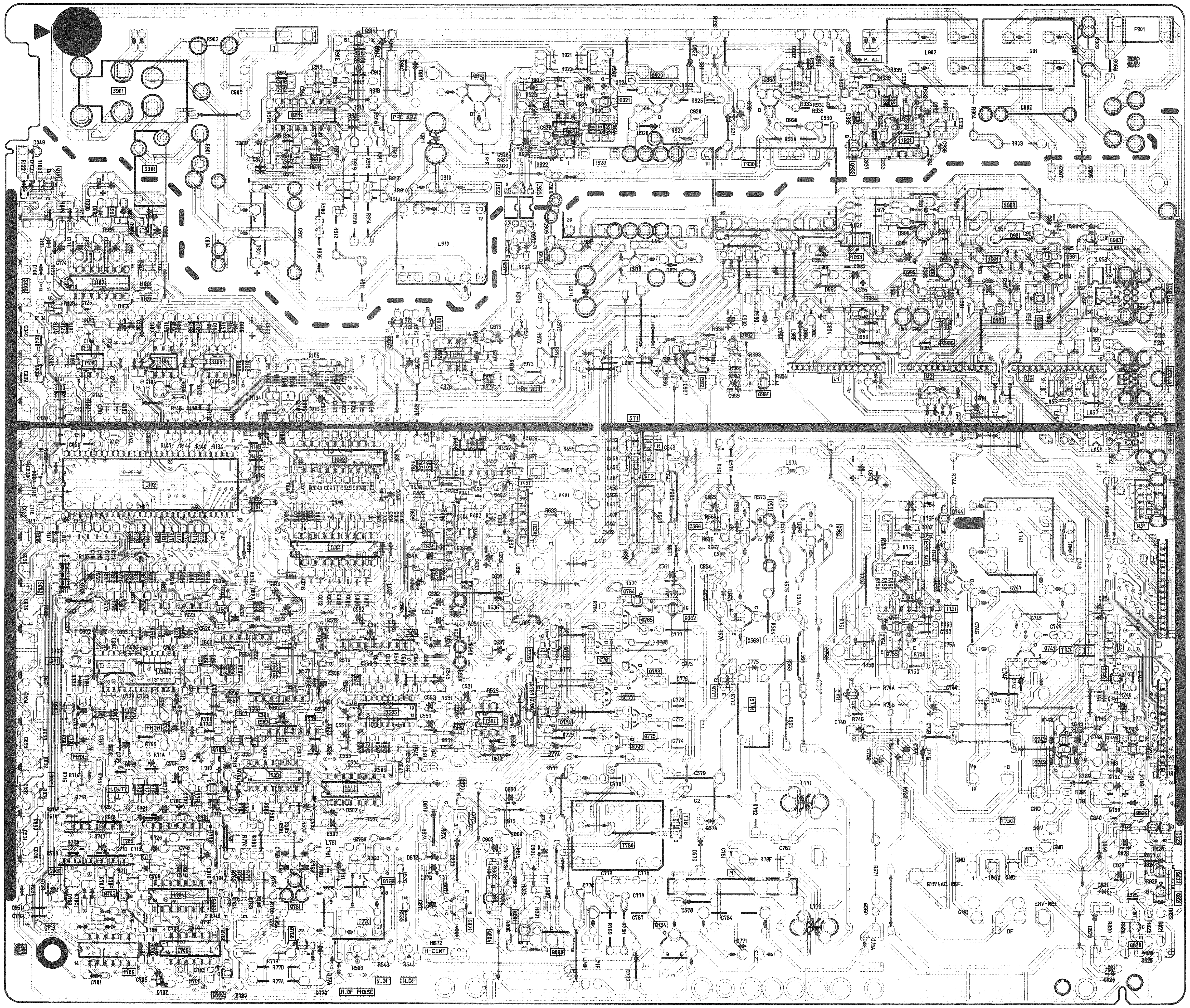
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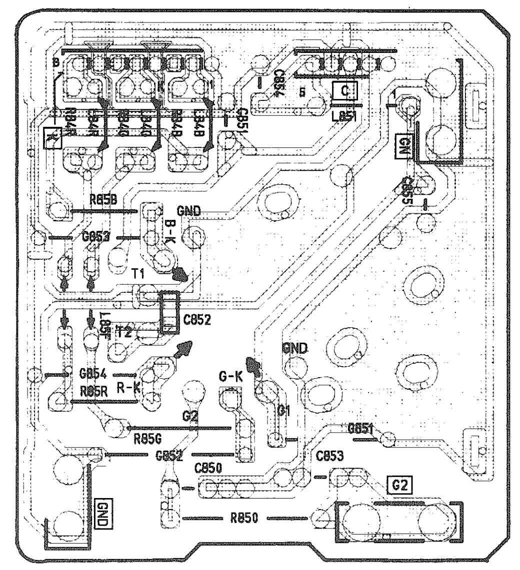
POWER CIRCUIT DIAGRAM

PRINTED WIRING BORD

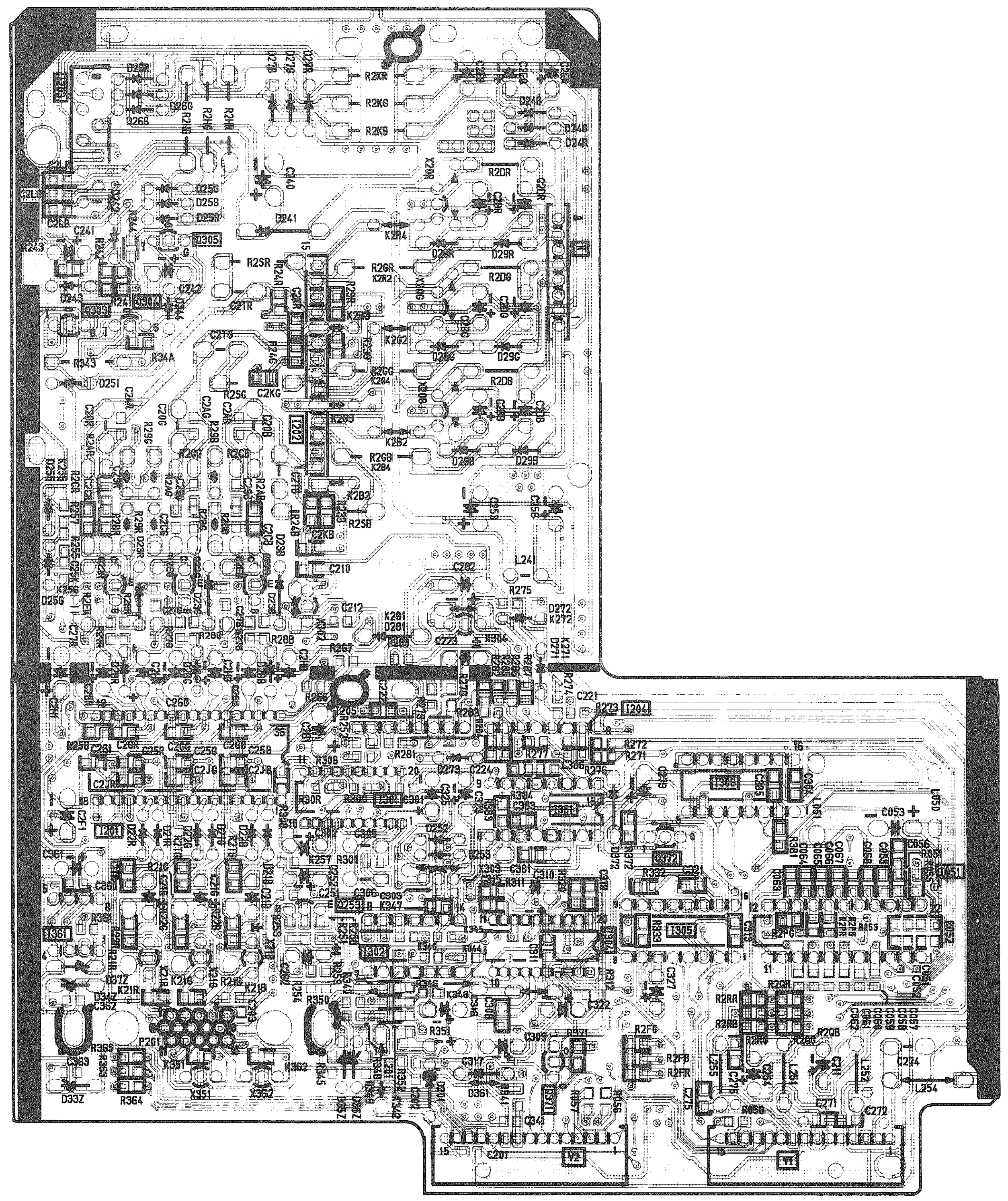
MAIN P.W.B



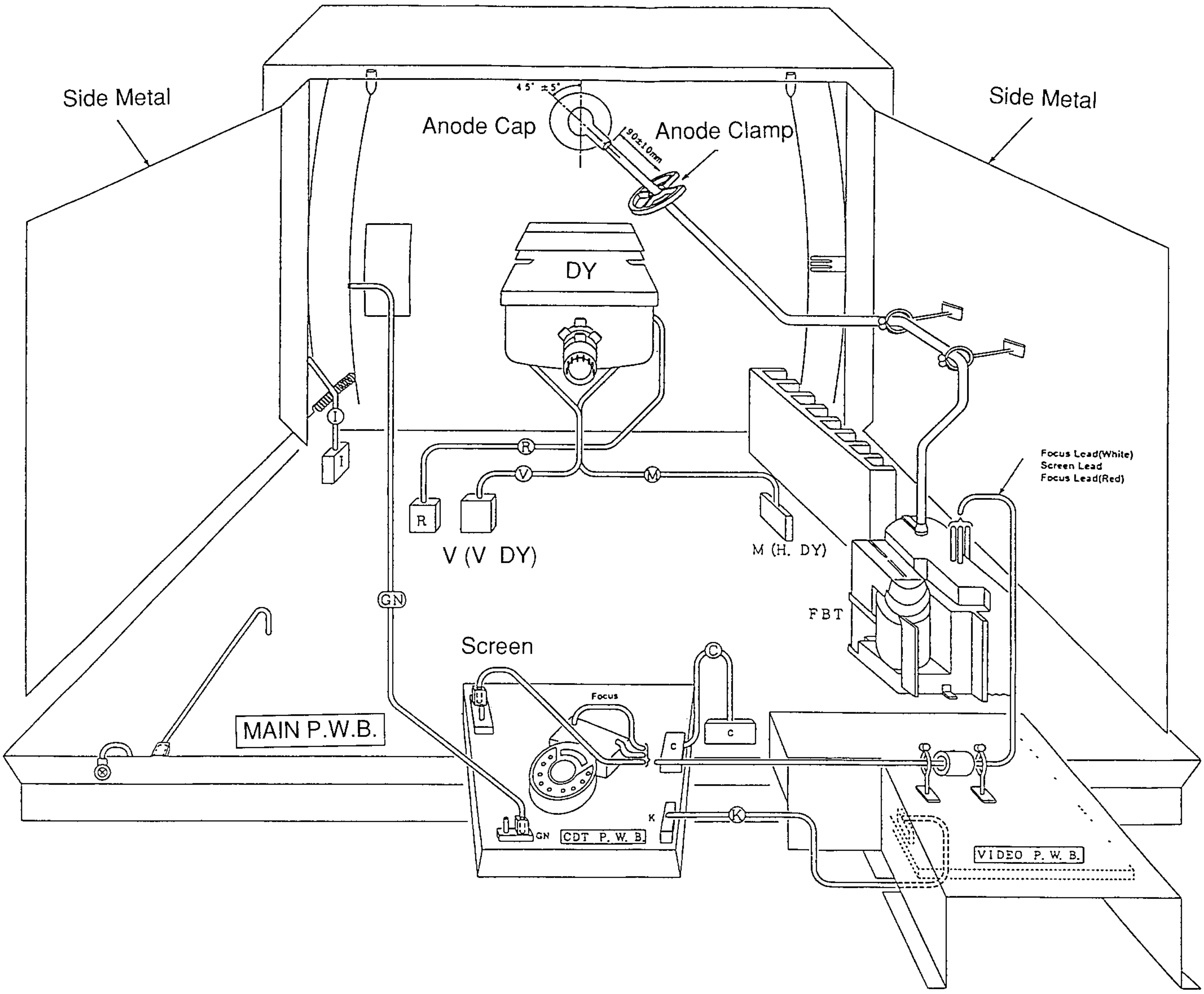
CPT P.W.B



VIDEO P.W.B



WIRING DIAGRAM



REPLACEMENT PARTS LIST

PRODUCT SAFETY NOTE Components marked with a ⚠ have special characteristics important to safety.
Before replacing any of there components,read carefully,the PRODUCT SAFETY NOTICE of this Service Manual.
Don't degrade the safety of the receiver through improper servicing.
NOTE . This parts list is applied to the products mode in Japan.

ABBREVIATIONS	Capacitors·········CD:Ceramic Disk, PF:Polyester Film, EL:Electrolytic, PP:Polypropylene, PR:Paper, TA:Tantalum, TM:Trimer. Resistors··········CF:Carbon film, WW:Wire Would, FR:Fuse Resistor, MG:Metal Glazzed, VR:Variable resistor, CC:Carbon Composition, MF:Metal Oxide Film. Semiconductors····TR:Transistor, DI:Diode, ZD:Zener Diode, VA:Varistor, TH:Thermistor

SYMBOL NO.	PART NO.	DESCRIPTION
C001	0244171R	CD 0.01MF +80-20% 50V
C002	0244171R	CD 0.01MF +80-20% 50V
C003	0244171R	CD 0.01MF +80-20% 50V
C004	0244171R	CD 0.01MF +80-20% 50V
C005	0244171R	CD 0.01MF +80-20% 50V
C006	0244171R	CD 0.01MF +80-20% 50V
C007	0244171R	CD 0.01MF +80-20% 50V
C008	0244171R	CD 0.01MF +80-20% 50V
C009	0244171R	CD 0.01MF +80-20% 50V
C010	0244171R	CD 0.01MF +80-20% 50V
C011	0244171R	CD 0.01MF +80-20% 50V
C012	0244171R	CD 0.01MF +80-20% 50V
C013	0890035M	CD 1000PF +-10% 50V
C014	0890032M	CD 560PF +-10% 50V
C015	0800325R	EL 100MF 10V
C016	0244171R	CD 0.01MF +80-20% 50V
C017	0244171R	CD 0.01MF +80-20% 50V
C018	0890035M	CD 1000PF +-10% 50V
C019	0890032M	CD 560PF +-10% 50V
C020	0800325R	EL 100MF 10V
C021	0244171R	CD 0.01MF +80-20% 50V
C022	0244171R	CD 0.01MF +80-20% 50V
C023	0244171R	CD 0.01MF +80-20% 50V
C024	0244171R	CD 0.01MF +80-20% 50V
C025	0244171R	CD 0.01MF +80-20% 50V
C027	0244171R	CD 0.01MF +80-20% 50V
C028	0244171R	CD 0.01MF +80-20% 50V
C045	0244171R	CD 0.01MF +80-20% 50V
C046	0244171R	CD 0.01MF +80-20% 50V
C047	0244171R	CD 0.01MF +80-20% 50V
C048	0244171R	CD 0.01MF +80-20% 50V
C050	0244171R	CD 0.01MF +80-20% 50V
C051	0893031R	CHIP 100PF +-10% 50V
C052	0229006R	CHIP 560PF +-5% 50V
C053	0800325R	EL 100MF 10V
C055	0893044R	CHIP 0.01MF +-10% 50V
C056	0893044R	CHIP 0.01MF +-10% 50V
C057	0893044R	CHIP 0.01MF +-10% 50V
C058	0893044R	CHIP 0.01MF +-10% 50V
C059	0893044R	CHIP 0.01MF +-10% 50V
C05A	0890022M	CD 100PF +-10% 50V
C05B	0890005M	CD 4.7PF +-10% 50V
C060	0893044R	CHIP 0.01MF +-10% 50V
C061	0893044R	CHIP 0.01MF +-10% 50V
C062	0893044R	CHIP 0.01MF +-10% 50V
C063	0893044R	CHIP 0.01MF +-10% 50V
C064	0893044R	CHIP 0.01MF +-10% 50V
C065	0893044R	CHIP 0.01MF +-10% 50V
C066	0893044R	CHIP 0.01MF +-10% 50V
C067	0893044R	CHIP 0.01MF +-10% 50V
C068	0893044R	CHIP 0.01MF +-10% 50V
C101	0890115R	CD 12PF +-5% 50V
C102	0890115R	CD 12PF +-5% 50V
C104	0880053R	PF 0.047MF +-10% 50V
C105	0880053R	PF 0.047MF +-10% 50V
C107	0880053R	PF 0.047MF +-10% 50V
C111	0244171R	CD 0.01MF +80-20% 50V
C112	0244171R	CD 0.01MF +80-20% 50V
C113	0244171R	CD 0.01MF +80-20% 50V
C114	0244171R	CD 0.01MF +80-20% 50V
C115	0244171R	CD 0.01MF +80-20% 50V
C116	0244171R	CD 0.01MF +80-20% 50V
C117	0244171R	CD 0.01MF +80-20% 50V
C118	0244171R	CD 0.01MF +80-20% 50V
C119	0244171R	CD 0.01MF +80-20% 50V
C120	0244171R	CD 0.01MF +80-20% 50V
C121	0244171R	CD 0.01MF +80-20% 50V
C124	0244171R	CD 0.01MF +80-20% 50V
C125	0244171R	CD 0.01MF +80-20% 50V
C130	0800316R	EL 47MF 10V
C131	0244171R	CD 0.01MF +80-20% 50V
C141	0880053R	PF 0.047MF +-10% 50V
C142	0880053R	PF 0.047MF +-10% 50V
C143	0880053R	PF 0.047MF +-10% 50V
C144	0890087R	CD 1000PF +-10% 50V
C145	0880195R	PF 0.12MF +-5% 50V
C171	0800284R	EL 3.3MF 50V
C172	0800284R	EL 3.3MF 50V
C173	0800284R	EL 3.3MF 50V
C174	0800284R	EL 3.3MF 50V
C195	0244107R	CD 3300PF +-10% 50V
C20B	0246426R	CD 6PF +-0.5% 50V
C20G	0246415R	CD 5PF +-0.25% 50V
C20R	0246427R	CD 7PF +-0.5% 50V
C210	0893044R	CHIP 0.01MF +-10% 50V
C211	0800326R	EL 100MF 16V
C212	0893044R	CHIP 0.01MF +-10% 50V
C21B	0284621R	EL 0.47MF 50V
C21G	0284621R	EL 0.47MF 50V
C21R	0284621R	EL 0.47MF 50V
C221	0893044R	CHIP 0.01MF +-10% 50V
C222	0893044R	CHIP 0.01MF +-10% 50V
C223	0284638R	EL 10MF 16V
C224	0893027R	CHIP 0.1MF 25V
C240	0258128F	EL 100MF +-20% 100V
C241	0800317R	EL 47MF 16V

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SYMBOL NO.	PART NO.	DESCRIPTION	SYMBOL NO.	PART NO.	DESCRIPTION
C242	0800279R	EL 1MF 50V	C301	0893067R	CD 0.1MF +80-20% 250V
C251	0893067R	CD 0.1MF +80-20% 250V	C302	0800334R	EL 220MF 10V
C252	0800334R	EL 220MF 10V	C303	0893044R	CHIP 0.01MF +-10% 50V
C253	0800323R	EL 47MF 100V	C304	0893044R	CHIP 0.01MF +-10% 50V
C254	0800317R	EL 47MF 16V	C305	0880039R	PF 4700PF +-10% 50V
C256	0800305R	EL 22MF 100V	C306	0880057R	PF 0.1MF +-10% 50V
C25B	0893072R	CD 0.47MF +80-20% 250V	C308	0893096R	CHIP 0.068MF +80-20% 50V
C25G	0893072R	CD 0.47MF +80-20% 250V	C309	0800294R	EL 10MF 50V
C25K	0893044R	CHIP 0.01MF +-10% 50V	C310	0800325R	EL 100MF 10V
C25R	0893072R	CD 0.47MF +80-20% 250V	C311	0893067R	CD 0.1MF +80-20% 250V
C261	0893044R	CHIP 0.01MF +-10% 50V	C313	0893044R	CHIP 0.01MF +-10% 50V
C262	0284667R	EL 47MF 16V	C315	0228754R	CHIP 100PF +-5% 50V
C26B	0800284R	EL 3.3MF 50V	C316	0800288R	EL 4.7MF 50V
C26G	0800284R	EL 3.3MF 50V	C317	0800288R	EL 4.7MF 50V
C26R	0800284R	EL 3.3MF 50V	C319	0229001R	CHIP 220PF +-10% 50V
C271	0893031R	CHIP 1000PF +-10% 50V	C321	0893043R	CHIP 8200PF +-10% 50V
C272	0893031R	CHIP 1000PF +-10% 50V	C322	0800279R	EL 1MF 50V
C275	0893044R	CHIP 0.01MF +-10% 50V	C325	0800279R	EL 1MF 50V
C276	0893044R	CHIP 0.01MF +-10% 50V	C327	0800284R	EL 3.3MF 50V
C27B	0893086R	CHIP 0.1MF +-10% 50V	C341	0893031R	CHIP 1000PF +-10% 50V
C27G	0893086R	CHIP 0.1MF +-10% 50V	C360	0893044R	CHIP 0.01MF +-10% 50V
C27R	0893086R	CHIP 0.1MF +-10% 50V	C361	0800316R	EL 47MF 10V
C281	0800353R	EL 470MF 16V	C381	0893044R	CHIP 0.01MF +-10% 50V
C282	0800326R	EL 100MF 16V	C383	0893037R	CHIP 3300PF +-10% 50V
C29B	0228738R	CHIP 22PF +-5% 50V	C385	0228754R	CHIP 100PF +-5% 50V
C29G	0228738R	CHIP 22PF +-5% 50V	C386	0893031R	CHIP 1000PF +-10% 50V
C29R	0228738R	CHIP 22PF +-5% 50V	C403	0284638R	EL 10MF 16BV
C2AB	0228894R	CHIP 100PF +-5% 50V	C404	0244171R	CD 0.01MF +80-20% 50V
C2AG	0228894R	CHIP 100PF +-5% 50V	C501	0244171R	CD 0.01MF +80-20% 50V
C2AR	0228894R	CHIP 100PF +-5% 50V	C502	0880033R	PF 1500PF +-10% 50V
C2BB	0258125R	EL 22MF 100V	C503	0800279R	EL 1MF 50V
C2BG	0258125R	EL 22MF 100V	C504	0890022M	CD 100PF +-10% 50V
C2BR	0258125R	EL 22MF 100V	C505	0880051R	PF 0.033MF +-10% 50V
C2DB	0258119R	EL 0.47MF 100V	C507	0800325R	EL 100MF 10V
C2DG	0258119R	EL 0.47MF 100V	C50A	0800294R	EL 10MF 50V
C2DR	0258119R	EL 0.47MF 100V	C50B	0800294R	EL 10MF 50V
C2EB	0258124R	EL 10MF 100V	C531	0800282R	EL 2.2MF 50V
C2EG	0258124R	EL 10MF 100V	C532	0800294R	EL 10MF 50V
C2ER	0258124R	EL 10MF 100V	C533	0800294R	EL 10MF 50V
C2F1	0800353R	EL 470MF 16V	C534	0800279R	EL 1MF 50V
C2GB	0893067R	CD 0.1MF +80-20% 250V	C53A	0800294R	EL 10MF 50V
C2GG	0893027R	CHIP 0.1MF 25V	C53B	0800294R	EL 10MF 50V
C2GR	0893027R	CHIP 0.1MF 25V	C540	0244171R	CD 0.01MF +80-20% 50V
C2H1	0800353R	EL 470MF 16V	C541	0244171R	CD 0.01MF +80-20% 50V
C2JB	0893044R	CHIP 0.01MF +-10% 50V	C542	0244171R	CD 0.01MF +80-20% 50V
C2JG	0893044R	CHIP 0.01MF +-10% 50V	C543	0890022M	CD 100PF +-10% 50V
C2JR	0893044R	CHIP 0.01MF +-10% 50V	C544	0890022M	CD 100PF +-10% 50V
C2KB	0893044R	CHIP 0.01MF +-10% 50V	C545	0800294R	EL 10MF 50V
C2KG	0893044R	CHIP 0.01MF +-10% 50V	C546	0244171R	CD 0.01MF +80-20% 50V
C2KR	0893044R	CHIP 0.01MF +-10% 50V	C547	0244171R	CD 0.01MF +80-20% 50V
C2LB	0893027R	CHIP 0.1MF 25V	C548	0800279R	EL 1MF 50V
C2LG	0893027R	CHIP 0.1MF 25V	C549	0890017M	CD 47PF 50V +-5%
C2LR	0893027R	CHIP 0.1MF 25V	C550	0244171R	CD 0.01MF +80-20% 50V
C2TB	0247854R	CD 100PF +-5% 500V	C551	0800294R	EL 10MF 50V
C2TG	0247854R	CD 100PF +-5% 500V	C552	0800288R	EL 4.7MF 50V
C2TR	0247854R	CD 100PF +-5% 500V	C553	0800277R	EL 0.47MF 50V

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SYMBOL NO.	PART NO.	DESCRIPTION	SYMBOL NO.	PART NO.	DESCRIPTION
C561	0800294R	EL 10MF 50V	C71D	0890022M	CD 100PF +-10% 50V
C562	0247846R	CD 47PF +-5% 500V	C720	0890022M	CD 100PF +-10% 50V
C563	0890085R	CD 680PF +-10% 50V	C721	0244171R	CD 0.01MF +80-20% 50V
C564	0890085R	CD 680PF +-10% 50V	C722	0800299R	EL 22MF 16V
C565	0255013R	EL 4.7MF 63V	C740	0890035M	CD 1000PF +-10% 50V
C571	0800325R	EL 100MF 10V	C741	0800326R	EL 100MF 16V
C579	AN01069F	PF 0.012MF +-5% 2KV	C742	0800351R	EL 470MF 6.3V
C601	0244171R	CD 0.01MF +80-20% 50V	⚠ C744	0244206R	CD 330PF +-10% 2KV
C602	0244171R	CD 0.01MF +80-20% 50V	⚠ C745	AN01041F	PF 1000PF +-5% 2KV
C603	0244171R	CD 0.01MF +80-20% 50V	⚠ C746	AN01044F	PF 1300PF +-5% 2KV
C604	0800279R	EL 1MF 50V	⚠ C747	AN01041F	PF 1000PF +-5% 2KV
C605	0244171R	CD 0.01MF +80-20% 50V	⚠ C748	0299933F	PP 0.39MF +-10% 200V
C606	0880201R	PF 0.33MF +-5% 50V	C74A	0800294R	EL 10MF 50V
C607	0800317R	EL 47MF 16V	C750	AN00924F	PF 1MF +-5% 250V
C608	0800326R	EL 100MF 16V	C751	0890035M	CD 1000PF +-10% 50V
C609	0244171R	CD 0.01MF +80-20% 50V	C752	0890031M	CD 470PF +-10% 50V
C610	0244171R	CD 0.01MF +80-20% 50V	C754	0800294R	EL 10MF 50V
C611	0244171R	CD 0.01MF +80-20% 50V	C755	0258124R	EL 10MF 100V
C612	0800294R	EL 10MF 50V	C756	0800279R	EL 1MF 50V
C620	0800294R	EL 10MF 50V	C757	0800282R	EL 2.2MF 50V
C630	0880059R	PF 0.15MF 50V	C757	0800288R	EL 4.7MF 50V
C631	0880057R	PF 0.1MF +-10% 50V	C758	0800282R	EL 2.2MF 50V
C632	0254516R	EL 22MF 25V	C760	0880053R	PF 0.047MF +-10% 50V
C634	0800363N	EL 1000MF 35V	C761	0880053R	PF 0.047MF +-10% 50V
C635	0800328R	EL 100MF 35V	C763	0255003R	EL 22MF 31.5V
C636	0880044R	PF 0.01MF +-10% 50V	C764	AN01055F	PF 3600PF +-5% 2KV
C637	0255011F	EL 2200MF 31.5V	C76B	0800279R	EL 1MF 50V
C638	0800287R	EL 4.7MF 35V	C770	0247842R	CD 33PF +-5% 500V
C639	0244171R	CD 0.01MF +80-20% 50V	C771	0262825F	PF 0.15MF +-5% 400V
C640	0800279R	EL 1MF 50V	C773	AN00902F	PF 0.15MF +-5% 250V
C641	0800294R	EL 10MF 50V	C774	AN00907F	PF 0.24MF +-5% 250V
C651	0890022M	CD 100PF +-10% 50V	C775	AN00913F	PF 0.39MF +-5% 250V
C702	0880057R	PF 0.1MF +-10% 50V	C776	AN00917F	PF 0.56MF +-5% 250V
C703	0236389R	CD 470PF +-5% 50V	C777	AN00922F	PF 0.82MF +-5% 250V
C704	0890034M	CD 820PF +-10% 50V	C778	0262823F	PF 0.12MF +-5% 400V
C705	0800282R	EL 2.2MF 50V	C77A	0244206R	CD 330PF +-10% 2KV
C706	0800294R	EL 10MF 50V	C77B	0244206R	CD 330PF +-10% 2KV
C707	0800294R	EL 10MF 50V	C77C	0245608R	CD 1000PF +-10% 1KV
C708	0880037R	PF 3300PF +-10% 50V	C781	0244505R	CD 2200PF +-10% 500V
C709	0800279R	EL 1MF 50V	C782	0244505R	CD 2200PF +-10% 500V
C70C	0800294R	EL 10MF 50V	C79A	0245610R	CD 2200PF +-10% 1KV
C70D	0800279R	EL 1MF 50V	C801	0800296R	EL 10MF 100V
C70E	0800325R	EL 100MF 10V	C802	0800296R	EL 10MF 100V
C70F	0800282R	EL 2.2MF 50V	C803	0880035R	PF 2200PF +-10% 50V
C70G	0800294R	EL 10MF 50V	C820	AL00017R	EL 22MF 200V
C70H	0890031M	CD 470PF +-10% 50V	C822	0800353R	EL 470MF 16V
C710	0880046R	PF 0.015MF +-10% 50V	C840	0880044R	PF 0.01MF +-10% 50V
C711	0800325R	EL 100MF 10V	C850	0245611R	CD 3300PF +-10% 1KV
C712	0800352R	EL 470MF 10V	C851	0244171R	CD 0.01MF +80-20% 50V
C713	0800361N	EL 1000MF 16V	C853	0245604R	PP 330PF +-10% 1KV
C714	0244171R	CD 0.01MF +80-20% 50V	C854	0244505R	CD 2200PF +-10% 500V
C715	0800294R	EL 10MF 50V	C870	0800326R	EL 100MF 16V
C717	0800279R	EL 1MF 50V	C871	0800326R	EL 100MF 16V
C718	0800299R	EL 22MF 16V	C901	262773	PP 0.1MF +-20% 250V
C719	0890035M	CD 1000PF +-10% 50V	⚠ C903	AN00153S	PF 0.47MF +-20% 250V
C71B	0800335R	EL 220MF 16V	⚠ C904	AN00153S	PF 0.47MF +-20% 250V

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⚠ C906	AJ00585F	CD 4700PF +-10% 250V	⚠ C98E	0243509R	CD 470PF +-10% 500V
⚠ C907	AJ00585F	CD 4700PF +-10% 250V	C98F	0245601R	PP 100PF +-10% 1KV
⚠ C908	AJ00585F	CD 4700PF +-10% 250V	C98H	0243507R	CD 330PF +-10% 500V
⚠ C909	AJ00585F	CD 4700PF +-10% 250V	C98J	0800294R	EL 10MF 50V
C90C	AJ00585F	CD 4700PF +-10% 250V	C98K	0800299R	EL 22MF 16V
C910	AN00153S	PF 0.47MF +-20% 250V	C98M	0800371N	EL 3300MF 10V
⚠ C911	AL00801	EL 220MF 450V	C98N	0800299R	EL 22MF 16V
C912	0800328R	EL 100MF 35V	C992	0800366N	EL 2200MF 10V
C913	0800279R	EL 1MF 50V	C998	0800317R	EL 47MF 16V
C914	0890019M	CD 68PF +-5% 50V	C999	0800335R	EL 220MF 16V
⚠ C915	0236394R	CD 0.001MF +-5% 50V	R001	0700054M	CF 10K OHM +-5% 1/16W
C916	0244102R	CD 1200PF +-10% 50V	R002	0700046M	CF 2.7K OHM +-5% 1/16W
C917	0890023M	CD 120PF +-10% 50V	R003	0700054M	CF 10K OHM +-5% 1/16W
C918	0890035M	CD 1000PF +-10% 50V	R004	0700054M	CF 10K OHM +-5% 1/16W
C919	0880195R	PF 0.12MF +-5% 50V	R005	0700046M	CF 2.7K OHM +-5% 1/16W
C91A	0880048R	PF 0.022MF +-10% 50V	R006	0700054M	CF 10K OHM +-5% 1/16W
C920	0244507R	CD 3300PF +-10% 500V	R007	0700041M	CF 1K OHM +-5% 1/16W
C921	0800336R	EL 220MF 25V	R030	0700041M	CF 1K OHM +-5% 1/16W
C922	0800279R	EL 1MF 50V	R031	0700041M	CF 1K OHM +-5% 1/16W
⚠ C923	AJ00023R	CD 820PF +-2% 50V	R032	0700041M	CF 1K OHM +-5% 1/16W
C924	0244107R	CD 3300PF +-10% 50V	R033	0700041M	CF 1K OHM +-5% 1/16W
C925	0890031M	CD 470PF +-10% 50V	R034	0700041M	CF 1K OHM +-5% 1/16W
C928	0244171R	CD 0.01MF +80-20% 50V	R035	0700041M	CF 1K OHM +-5% 1/16W
C92A	0890035M	CD 1000PF +-10% 50V	R036	0700041M	CF 1K OHM +-5% 1/16W
C92C	0880044R	PF 0.01MF +-10% 50V	R037	0700041M	CF 1K OHM +-5% 1/16W
C930	0244505R	CD 2200PF +-10% 500V	R038	0700041M	CF 1K OHM +-5% 1/16W
C931	0284446R	EL 1MF 50V	R039	0700041M	CF 1K OHM +-5% 1/16W
C932	0800312R	EL 33MF 50V	R040	0700041M	CF 1K OHM +-5% 1/16W
C933	0800279R	EL 1MF 50V	R049	0700031M	CF 180 OHM +-5% 1/16W
⚠ C934	AJ00023R	CD 820PF +-2% 50V	R051	0195925R	CHIP 10K OHM +-5% 1/10W
C935	0244109R	CD 4700PF +-10% 50V	R052	0195910R	CHIP 2.7K OHM +-5% 1/10W
C936	0880046R	PF 0.015MF +-10% 50V	R053	0195922R	CHIP 8.2K OHM +-5% 1/10W
C937	0880057R	PF 0.1MF +-10% 50V	R055	0195891R	CHIP 470 OHM +-5% 1/10W
C938	0880051R	PF 0.033MF +-10% 50V	R056	0195875R	CHIP 100 OHM +-5% 1/10W
C939	0880037R	PF 3300PF +-10% 50V	R057	0195875R	CHIP 100 OHM +-5% 1/10W
C93A	0880053R	PF 0.047MF +-10% 50V	R058	0195250R	CHIP 0 OHM 1/16W
C970	0245601R	PP 100PF +-10% 1KV	R105	0700054M	CF 10K OHM +-5% 1/16W
C971	AL00071	EL 470MF 200V	R109	0700049M	CF 4.7K OHM +-5% 1/16W
C972	AL00021R	EL 100MF 200V	R110	0700049M	CF 4.7K OHM +-5% 1/16W
C973	0243510R	CD 560PF +-10% 500V	R111	0700027M	CF 100 OHM +-5% 1/16W
⚠ C974	0800317R	EL 47MF 16V	R112	0700027M	CF 100 OHM +-5% 1/16W
⚠ C975	0800317R	EL 47MF 16V	R113	0700027M	CF 100 OHM +-5% 1/16W
C976	0800294R	EL 10MF 50V	R114	0700027M	CF 100 OHM +-5% 1/16W
C977	0244107R	CD 3300PF +-10% 50V	R115	0700027M	CF 100 OHM +-5% 1/16W
⚠ C978	0880051R	PF 0.033MF +-10% 50V	R116	0700027M	CF 100 OHM +-5% 1/16W
C97L	0244501R	CD 1000PF +-10% 500V	R117	0700027M	CF 100 OHM +-5% 1/16W
⚠ C981	0284482N	EL 47MF 100V	R118	0700027M	CF 100 OHM +-5% 1/16W
C982	0255010N	EL 1000MF +-20% 31.5V	R119	0700027M	CF 100 OHM +-5% 1/16W
C983	0254509N	EL 1000MF 16V	R120	0700027M	CF 100 OHM +-5% 1/16W
C984	0254020R	CE 470MF 10V	R121	0700027M	CF 100 OHM +-5% 1/16W
C985	0284404R	EL 100MF 16V	R124	0700054M	CF 10K OHM +-5% 1/16W
C986	0800328R	EL 100MF 35V	R125	0700054M	CF 10K OHM +-5% 1/16W
C987	0800326R	EL 100MF 16V	R126	0700049M	CF 4.7K OHM +-5% 1/16W
C988	0800353R	EL 470MF 16V	R127	0700049M	CF 4.7K OHM +-5% 1/16W
C989	0800333R	EL 220MF 6.3V	R131	0700027M	CF 100 OHM +-5% 1/16W
C98A	0247854R	CD 100PF +-5% 500V	R132	0700027M	CF 100 OHM +-5% 1/16W

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R133	0700027M	CF 100 OHM +-5% 1/16W	R254	0195939R	CHIP 39K OHM +-5% 1/10W
R134	0700027M	CF 100 OHM +-5% 1/16W	R255	0195900R	CHIP 1K OHM +-5% 1/10W
R135	0700027M	CF 100 OHM +-5% 1/16W	R256	0195900R	CHIP 1K OHM +-5% 1/10W
R139	0700027M	CF 100 OHM +-5% 1/16W	R257	0195922R	CHIP 8.2K OHM +-5% 1/10W
R13A	0700027M	CF 100 OHM +-5% 1/16W	R258	0195866R	CHIP 47 OHM +-5% 1/16W
R141	0700054M	CF 10K OHM +-5% 1/16W	R259	0195891R	CHIP 470 OHM +-5% 1/10W
R142	0700054M	CF 10K OHM +-5% 1/16W	R266	0195947R	CHIP 82K OHM +-5% 1/10W
R143	0700041M	CF 1K OHM +-5% 1/16W	R267	0195929R	CHIP 15K OHM +-5% 1/10W
R144	0700027M	CF 100 OHM +-5% 1/16W	R271	0195943R	CHIP 56K OHM +-5% 1/10W
R145	0700027M	CF 100 OHM +-5% 1/16W	R272	0195945R	CHIP 68K OHM +-5% 1/10W
R146	0700027M	CF 100 OHM +-5% 1/16W	R273	0195937R	CHIP 33K OHM +-5% 1/10W
R147	0700027M	CF 100 OHM +-5% 1/16W	R274	0195922R	CHIP 8.2K OHM +-5% 1/10W
R148	0700045M	CF 2.2K OHM +-5% 1/16W	R275	0195912R	CHIP 3.3K OHM +-5% 1/10W
R149	0700041M	CF 1K OHM +-5% 1/16W	R276	0195925R	CHIP 10K OHM +-5% 1/10W
R150	0700027M	CF 100 OHM +-5% 1/16W	R277	0195927R	CHIP 12K OHM +-5% 1/10W
R157	0700054M	CF 10K OHM +-5% 1/16W	R278	0195933R	CHIP 22K OHM +-5% 1/10W
R158	0700049M	CF 4.7K OHM +-5% 1/16W	R279	0195922R	CHIP 8.2K OHM +-5% 1/10W
R159	0700036M	CF 470 OHM +-5% 1/16W	R27B	0195887R	CHIP 330 OHM +-5% 1/10W
R160	0700036M	CF 470 OHM +-5% 1/16W	R27G	0195887R	CHIP 330 OHM +-5% 1/10W
R162	0700049M	CF 4.7K OHM +-5% 1/16W	R27R	0195887R	CHIP 330 OHM +-5% 1/10W
R168	0700049M	CF 4.7K OHM +-5% 1/16W	R280	0195914R	CHIP 3.9K OHM +-5% 1/10W
R169	0700049M	CF 4.7K OHM +-5% 1/16W	R281	0195937R	CHIP 33K OHM +-5% 1/10W
R171	0700027M	CF 100 OHM +-5% 1/16W	R282	0195920R	CHIP 6.8K OHM +-5% 1/10W
R172	0700027M	CF 100 OHM +-5% 1/16W	R283	0195943R	CHIP 56K OHM +-5% 1/10W
R173	0700027M	CF 100 OHM +-5% 1/16W	R284	0195943R	CHIP 56K OHM +-5% 1/10W
R174	0700027M	CF 100 OHM +-5% 1/16W	R285	0195937R	CHIP 33K OHM +-5% 1/10W
R175	0700027M	CF 100 OHM +-5% 1/16W	R286	0195929R	CHIP 15K OHM +-5% 1/10W
R180	0700049M	CF 4.7K OHM +-5% 1/16W	R28B	0195879R	CHIP 150 OHM +-5% 1/10W
R181	0700027M	CF 100 OHM +-5% 1/16W	R28G	0195879R	CHIP 150 OHM +-5% 1/10W
R182	0700027M	CF 100 OHM +-5% 1/16W	R28R	0195879R	CHIP 150 OHM +-5% 1/10W
R183	0700027M	CF 100 OHM +-5% 1/16W	R29B	AT00514S	MF 680 OHM +-5% 2W
R186	0700027M	CF 100 OHM +-5% 1/16W	R29G	AT00514S	MF 680 OHM +-5% 2W
R187	0700027M	CF 100 OHM +-5% 1/16W	R29R	AT00514S	MF 680 OHM +-5% 2W
R188	0700049M	CF 4.7K OHM +-5% 1/16W	R2AB	0700027M	CF 100 OHM +-5% 1/16W
R189	0700027M	CF 100 OHM +-5% 1/16W	R2AG	0700027M	CF 100 OHM +-5% 1/16W
R191	0700027M	CF 100 OHM +-5% 1/16W	R2AR	0700027M	CF 100 OHM +-5% 1/16W
R192	0700049M	CF 4.7K OHM +-5% 1/16W	R2BB	0195947R	CHIP 82K OHM +-5% 1/10W
R194	0700027M	CF 100 OHM +-5% 1/16W	R2BG	0195947R	CHIP 82K OHM +-5% 1/10W
R195	0700054M	CF 10K OHM +-5% 1/16W	R2BR	0195947R	CHIP 82K OHM +-5% 1/10W
R198	0700049M	CF 4.7K OHM +-5% 1/16W	R2CB	0700041M	CF 1K OHM +-5% 1/16W
R21B	0188921M	CF 750 OHM +-2% 1/8W	R2CG	0700041M	CF 1K OHM +-5% 1/16W
R21G	0188921M	CF 750 OHM +-2% 1/8W	R2CR	0700041M	CF 1K OHM +-5% 1/16W
R21R	0188921M	CF 750 OHM +-2% 1/8W	R2DB	0100121M	CF 220K OHM +-5% 1/8W
R22B	0195250R	CHIP 0 OHM 1/16W	R2DG	0100121M	CF 220K OHM +-5% 1/8W
R22G	0195250R	CHIP 0 OHM 1/16W	R2DR	0100121M	CF 220K OHM +-5% 1/8W
R22R	0195250R	CHIP 0 OHM 1/16W	R2EB	0100047M	CF 180 OHM +-5% 1/8W
R241	0195902R	CHIP 1.2K OHM +-5% 1/10W	R2EG	0100047M	CF 180 OHM +-5% 1/8W
R242	0195900R	CHIP 1K OHM +-5% 1/10W	R2ER	0100047M	CF 180 OHM +-5% 1/8W
R243	0195947R	CHIP 82K OHM +-5% 1/10W	R2FB	0195938R	CHIP 36K OHM +-5% 1/10W
R244	0195947R	CHIP 82K OHM +-5% 1/10W	R2FG	0195937R	CHIP 33K OHM +-5% 1/10W
R24B	0195935R	CHIP 27K OHM +-5% 1/10W	R2FR	0195936R	CHIP 30K OHM +-5% 1/10W
R24G	0195935R	CHIP 27K OHM +-5% 1/10W	R2GB	0100019M	CF 12 OHM +-5% 1/8W
R24R	0195935R	CHIP 27K OHM +-5% 1/10W	R2GG	0100019M	CF 12 OHM +-5% 1/8W
R251	0195941R	CHIP 47K OHM +-5% 1/10W	R2GR	0100019M	CF 12 OHM +-5% 1/8W
R252	0195900R	CHIP 1K OHM +-5% 1/10W	R2HB	0100111M	CF 82K OHM +-5% 1/8W
R253	0195875R	CHIP 100 OHM +-5% 1/10W	R2HG	0100111M	CF 82K OHM +-5% 1/8W

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SYMBOL NO.	PART NO.	DESCRIPTION	SYMBOL NO.	PART NO.	DESCRIPTION
R2HR	0100111M	CF 82K OHM +-5% 1/8W	R503	0700054M	CF 10K OHM +-5% 1/16W
R2KB	0188122M	CF 220 OHM +-5% 1/2W	R504	0700043M	CF 1.5K OHM +-5% 1/16W
R2KG	0188122M	CF 220 OHM +-5% 1/2W	R505	0150304U	VR 5K OHM
R2KR	0188122M	CF 220 OHM +-5% 1/2W	R506	0700027M	CF 100 OHM +-5% 1/16W
R2PB	0195922R	CHIP 8.2K OHM +-5% 1/10W	R521	0700062M	CF 39K OHM +-5% 1/16W
R2PG	0195922R	CHIP 8.2K OHM +-5% 1/10W	R522	0187086M	CF 7.5K OHM +-5% 1/16W
R2PR	0195922R	CHIP 8.2K OHM +-5% 1/10W	R523	0700048M	CF 3.9K OHM +-5% 1/16W
R2QB	0195910R	CHIP 2.7K OHM +-5% 1/10W	R524	0700054M	CF 10K OHM +-5% 1/16W
R2QG	0195910R	CHIP 2.7K OHM +-5% 1/10W	R525	0700054M	CF 10K OHM +-5% 1/16W
R2QR	0195910R	CHIP 2.7K OHM +-5% 1/10W	R527	0700051M	CF 5.6K OHM +-5% 1/16W
R2RB	0195925R	CHIP 10K OHM +-5% 1/10W	R528	0700049M	CF 4.7K OHM +-5% 1/16W
R2RG	0195910R	CHIP 2.7K OHM +-5% 1/10W	R529	0700054M	CF 10K OHM +-5% 1/16W
R2RR	0195910R	CHIP 2.7K OHM +-5% 1/10W	R530	0700038M	CF 680 OHM +-5% 1/16W
R2SB	0188164M	CF 330K OHM +-5% 1/2W	R531	0700041M	CF 1K OHM +-5% 1/16W
R2SG	0188164M	CF 330K OHM +-5% 1/2W	R532	0700044M	CF 1.8K OHM +-5% 1/16W
R2SR	0188164M	CF 330K OHM +-5% 1/2W	R533	0700044M	CF 1.8K OHM +-5% 1/16W
R2TB	0195879R	CHIP 150 OHM +-5% 1/10W	R540	0700057M	CF 18K OHM +-5% 1/16W
R2TG	0195879R	CHIP 150 OHM +-5% 1/10W	R541	0700053M	CF 8.2K OHM +-5% 1/16W
R2TR	0195879R	CHIP 150 OHM +-5% 1/10W	R542	0700052M	CF 6.8K OHM +-5% 1/16W
R301	0195909R	CHIP 2.4K OHM 1/16W	R543	0150302U	VR 2K OHM B
R308	0195872R	CHIP 82 OHM +-5% 1/10W	R544	0150302U	VR 2K OHM B
R30B	0195891R	CHIP 470 OHM +-5% 1/10W	R545	0700052M	CF 6.8K OHM +-5% 1/16W
R30G	0195891R	CHIP 470 OHM +-5% 1/10W	R546	0700052M	CF 6.8K OHM +-5% 1/16W
R30R	0195891R	CHIP 470 OHM +-5% 1/10W	R547	0700054M	CF 10K OHM +-5% 1/16W
R311	0195941R	CHIP 47K OHM +-5% 1/10W	R548	0700055M	CF 12K OHM +-5% 1/16W
R312	0195942R	CHIP 51K OHM +-5% 1/16W	R549	0700047M	CF 3.3K OHM +-5% 1/16W
R320	0195918R	CHIP 5.6K OHM +-5% 1/10W	R550	0700058M	CF 22K OHM +-5% 1/16W
R332	0195947R	CHIP 82K OHM +-5% 1/10W	R551	0700053M	CF 8.2K OHM +-5% 1/16W
R333	0195947R	CHIP 82K OHM +-5% 1/10W	R552	0700054M	CF 10K OHM +-5% 1/16W
R341	0195900R	CHIP 1K OHM +-5% 1/10W	R556	0700041M	CF 1K OHM +-5% 1/16W
R343	0100073M	CF 2.2K OHM +-5% 1/8W	R557	0700043M	CF 1.5K OHM +-5% 1/16W
R345	0195908R	CHIP 2.2K OHM +-5% 1/10W	R558	0700055M	CF 12K OHM +-5% 1/16W
R346	0195904R	CHIP 1.5K OHM +-5% 1/10W	R559	0700054M	CF 10K OHM +-5% 1/16W
R347	0195891R	CHIP 470 OHM +-5% 1/10W	R55A	0700054M	CF 10K OHM +-5% 1/16W
R348	0195875R	CHIP 100 OHM +-5% 1/10W	R55B	0700054M	CF 10K OHM +-5% 1/16W
R350	0195875R	CHIP 100 OHM +-5% 1/10W	R55C	0700067M	CF 100K OHM +-5% 1/16W
R351	0195904R	CHIP 1.5K OHM +-5% 1/10W	R561	0113769M	CF 6.2K OHM +-5% 1/2W
R352	0195891R	CHIP 470 OHM +-5% 1/10W	R562	0700043M	CF 1.5K OHM +-5% 1/16W
R361	0195941R	CHIP 47K OHM +-5% 1/10W	R563	AT00569S	MF 82K OHM +-5% 2W
R363	0195868R	CHIP 56 OHM +-5% 1/10W	R564	AT00567S	MF 68K OHM +-5% 2W
R364	0195868R	CHIP 56 OHM +-5% 1/10W	R565	AT00569S	MF 82K OHM +-5% 2W
R365	0195868R	CHIP 56 OHM +-5% 1/10W	R566	AT00567S	MF 68K OHM +-5% 2W
R371	0195912R	CHIP 3.3K OHM +-5% 1/10W	R567	0114210M	CF 24K OHM +-5% 1/4W
R372	0195904R	CHIP 1.5K OHM +-5% 1/10W	R570	0113784M	CF 24K OHM +-5% 1/2W
R381	0195925R	CHIP 10K OHM +-5% 1/10W	R571	0113750M	CF 1K OHM +-5% 1/2W
R383	0195947R	CHIP 82K OHM +-5% 1/10W	R572	0100065M	CF 1K OHM +-5% 1/8W
R384	0195918R	CHIP 5.6K OHM +-5% 1/10W	R573	0140957M	MF 330K OHM +-5% 1/2W
R401	0100065M	CF 1K OHM +-5% 1/8W	R574	0140957M	MF 330K OHM +-5% 1/2W
R402	0187088M	CF 9.1K OHM +-5% 1/16W	R575	0140957M	MF 330K OHM +-5% 1/2W
R403	0110123S	MF 120 OHM +-5% 1W	R576	0100113M	CF 100K OHM +-5% 1/8W
R404	0700047M	CF 3.3K OHM +-5% 1/16W	R577	0700051M	CF 5.6K OHM +-5% 1/16W
R405	0700046M	CF 2.7K OHM +-5% 1/16W	R578	0100107M	CF 56K OHM +-5% 1/8W
R406	0700059M	CF 27K OHM +-5% 1/16W	R579	0700065M	CF 68K OHM +-5% 1/16W
R500	0100041M	CF 100 OHM +-5% 1/8W	R57A	0188124M	CF 330 OHM +-5% 1/2W
R501	0700044M	CF 1.8K OHM +-5% 1/16W	R601	0700047M	CF 3.3K OHM +-5% 1/16W
R502	0100128M	CF 430K OHM +-5% 1/8W	R602	0700041M	CF 1K OHM +-5% 1/16W

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R603	0700041M	CF 1K OHM +-5% 1/16W	R706	0150283U	VR 1K OHM B
R604	0700055M	CF 12K OHM +-5% 1/16W	R707	0700041M	CF 1K OHM +-5% 1/16W
R605	0700058M	CF 22K OHM +-5% 1/16W	R708	0700041M	CF 1K OHM +-5% 1/16W
R606	0700053M	CF 8.2K OHM +-5% 1/16W	R709	0700041M	CF 1K OHM +-5% 1/16W
R607	0187082M	CF 5.1K OHM +-5% 1/16W	R70C	0700044M	CF 1.8K OHM +-5% 1/16W
R608	0700047M	CF 3.3K OHM +-5% 1/16W	R70F	0187098M	CF 24K OHM +-5% 1/16W
R609	0700063M	CF 47K OHM +-5% 1/16W	R70G	0187078M	CF 3.6K OHM +-5% 1/16W
R60A	0700054M	CF 10K OHM +-5% 1/16W	R70H	0700041M	CF 1K OHM +-5% 1/16W
R60B	0100115M	CF 120K OHM +-5% 1/8W	R70J	0700058M	CF 22K OHM +-5% 1/16W
R60C	0700041M	CF 1K OHM +-5% 1/16W	R710	0700054M	CF 10K OHM +-5% 1/16W
R60D	0700054M	CF 10K OHM +-5% 1/16W	R711	0700053M	CF 8.2K OHM +-5% 1/16W
R60E	0700054M	CF 10K OHM +-5% 1/16W	R712	0700058M	CF 22K OHM +-5% 1/16W
R60F	0187108M	CF 62K OHM +-5% 1/16W	R715	0119609M	MF 1.2K OHM +-1% 1/8W
R60G	0700047M	CF 3.3K OHM +-5% 1/16W	R716	0119614M	FR 2K OHM +-1% 1/8W
R60H	0187090M	CF 11K OHM +-5% 1/16W	R717	0119631M	MF 10K OHM +-1% 1/8W
R60K	0187088M	CF 9.1K OHM +-5% 1/16W	R718	0119631M	MF 10K OHM +-1% 1/8W
R610	0700049M	CF 4.7K OHM +-5% 1/16W	R719	0700045M	CF 2.2K OHM +-5% 1/16W
R611	0700041M	CF 1K OHM +-5% 1/16W	R71A	0700041M	CF 1K OHM +-5% 1/16W
R612	0700054M	CF 10K OHM +-5% 1/16W	R71B	0700049M	CF 4.7K OHM +-5% 1/16W
R613	0700054M	CF 10K OHM +-5% 1/16W	R720	0700037M	CF 560 OHM +-5% 1/16W
R614	0700054M	CF 10K OHM +-5% 1/16W	R721	0700053M	CF 8.2K OHM +-5% 1/16W
R615	0700054M	CF 10K OHM +-5% 1/16W	R722	0700055M	CF 12K OHM +-5% 1/16W
R616	0700054M	CF 10K OHM +-5% 1/16W	R723	0700053M	CF 8.2K OHM +-5% 1/16W
R617	0700054M	CF 10K OHM +-5% 1/16W	R725	0150283U	VR 1K OHM B
R618	0700043M	CF 1.5K OHM +-5% 1/16W	R726	0700041M	CF 1K OHM +-5% 1/16W
R619	0700044M	CF 1.8K OHM +-5% 1/16W	R727	0700053M	CF 8.2K OHM +-5% 1/16W
R61A	0700045M	CF 2.2K OHM +-5% 1/16W	R728	0700055M	CF 12K OHM +-5% 1/16W
R620	0700063M	CF 47K OHM +-5% 1/16W	R730	0700027M	CF 100 OHM +-5% 1/16W
R621	0700056M	CF 15K OHM +-5% 1/16W	R740	0700055M	CF 12K OHM +-5% 1/16W
R622	0700056M	CF 15K OHM +-5% 1/16W	R741	0700045M	CF 2.2K OHM +-5% 1/16W
R623	0700045M	CF 2.2K OHM +-5% 1/16W	R742	0700049M	CF 4.7K OHM +-5% 1/16W
R624	0700053M	CF 8.2K OHM +-5% 1/16W	R743	0113697M	CF 7.5 OHM +-5% 1/2W
R625	0700054M	CF 10K OHM +-5% 1/16W	R744	0700054M	CF 10K OHM +-5% 1/16W
R626	0700056M	CF 15K OHM +-5% 1/16W	R745	0700049M	CF 4.7K OHM +-5% 1/16W
R627	0700064M	CF 56K OHM +-5% 1/16W	R746	0700057M	CF 18K OHM +-5% 1/16W
R628	0700047M	CF 3.3K OHM +-5% 1/16W	⚠ R74A	0119693M	MF 0.39 OHM +-5% 1W
R629	0187088M	CF 9.1K OHM +-5% 1/16W	R750	AT00358S	MF 1K OHM +-5% 3W
R630	0113729M	CF 150 OHM +-5% 1/2W	R751	0188143M	CF 8.2K OHM +-5% 1/2W
R631	0119505M	FR 2.2 OHM +-5% 1/4W	⚠ R753	0179617M	MG 470K OHM +-1% 1/8W
R632	AT00496S	MF 150 OHM +-5% 2W	R754	0700046M	CF 2.7K OHM +-5% 1/16W
R633	0700043M	CF 1.5K OHM +-5% 1/16W	⚠ R755	0119632M	FR 11K OHM +-1% 1/8W
R634	0187094M	CF 16K OHM +-5% 1/16W	⚠ R756	0150284U	VR 2K OHM B
R635	0187094M	CF 16K OHM +-5% 1/16W	⚠ R757	0119631M	MF 10K OHM +-1% 1/8W
R636	AT00438S	MF 1 OHM +-5% 2W	R758	0188142M	CF 6.8K OHM +-5% 1/2W
R637	0700056M	CF 15K OHM +-5% 1/16W	R759	0188137M	CF 3.3K OHM +-5% 1/2W
R638	0700054M	CF 10K OHM +-5% 1/16W	R75A	0100107M	CF 56K OHM +-5% 1/8W
R639	0700038M	CF 680 OHM +-5% 1/16W	R75B	0100092M	CF 13K OHM +-5% 1/8W
R640	0700041M	CF 1K OHM +-5% 1/16W	R75C	0700049M	CF 4.7K OHM +-5% 1/16W
R641	0700064M	CF 56K OHM +-5% 1/16W	R75D	0700065M	CF 68K OHM +-5% 1/16W
R642	0700047M	CF 3.3K OHM +-5% 1/16W	R75E	0700036M	CF 470 OHM +-5% 1/16W
R643	0700054M	CF 10K OHM +-5% 1/16W	R75F	0100079M	CF 3.9K OHM +-5% 1/8W
R644	0700041M	CF 1K OHM +-5% 1/16W	R760	0100035M	CF 56 OHM +-5% 1/8W
R651	0700032M	CF 220 OHM +-5% 1/16W	R761	0700053M	CF 8.2K OHM +-5% 1/16W
R700	0700041M	CF 1K OHM +-5% 1/16W	R762	0187086M	CF 7.5K OHM +-5% 1/16W
R704	0700045M	CF 2.2K OHM +-5% 1/16W	R763	0700052M	CF 6.8K OHM +-5% 1/16W
R705	0119613M	MF 1.8K OHM +-1% 1/8W	R764	0700042M	CF 1.2K OHM +-5% 1/16W

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R765	0700041M	CF 1K OHM +-5% 1/16W	R903	0140959M	MF 470K OHM +-5% 1/2W
R766	0700054M	CF 10K OHM +-5% 1/16W	R904	0140959M	MF 470K OHM +-5% 1/2W
R767	AT00452S	MF 3.3 OHM +-5% 2W	R905	0113785M	CF 27K OHM +-5% 1/2W
R768	AT00498S	MF 180 OHM +-5% 2W	R906	0113785M	CF 27K OHM +-5% 1/2W
R769	0113756M	CF 1.8K OHM +-5% 1/2W	R911	0140955M	MF 220K OHM +-5% 1/2W
R76A	0100041M	CF 100 OHM +-5% 1/8W	R912	0140955M	MF 220K OHM +-5% 1/2W
R76D	0188144M	CF 10K OHM +-5% 1/2W	R913	0700045M	CF 2.2K OHM +-5% 1/16W
R770	0100099M	CF 27K OHM +-5% 1/8W	R914	0140955M	MF 220K OHM +-5% 1/2W
R771	0700052M	CF 6.8K OHM +-5% 1/16W	R915	0140955M	MF 220K OHM +-5% 1/2W
R772	0700054M	CF 10K OHM +-5% 1/16W	R916	0150282U	VR 500 OHM B
R773	0700054M	CF 10K OHM +-5% 1/16W	⚠ R917	AT00648M	CF 1.5K OHM +-2% 1/16W
R777	0700054M	CF 10K OHM +-5% 1/16W	R918	0140955M	MF 220K OHM +-5% 1/2W
R779	0700054M	CF 10K OHM +-5% 1/16W	R919	0140955M	MF 220K OHM +-5% 1/2W
R77A	0119690M	MF 0.27 OHM +-5% 1W	⚠ R91A	AT00649M	CF 1.6K OHM +-2% 1/16W
R77D	0119691M	MG 0.33 OHM +-5% 1W	R91B	0188105M	CF 120HM +-5% 1/2W
R781	0700054M	CF 10K OHM +-5% 1/16W	R91C	0187096M	CF 20K OHM +-5% 1/16W
R782	0113729M	CF 150 OHM +-5% 1/2W	R91D	0700037M	CF 560 OHM +-5% 1/16W
R783	0700054M	CF 10K OHM +-5% 1/16W	R91E	0100081M	CF 4.7K OHM +-5% 1/8W
R784	0700054M	CF 10K OHM +-5% 1/16W	R91F	0700067M	CF 100K OHM +-5% 1/16W
R78F	0113729M	CF 150 OHM +-5% 1/2W	R91G	0700049M	CF 4.7K OHM +-5% 1/16W
R791	0700051M	CF 5.6K OHM +-5% 1/16W	R91H	0700043M	CF 1.5K OHM +-5% 1/16W
⚠ R792	0119639M	RN 22K OHM +-1% 1/8W	R91J	0700056M	CF 15K OHM +-5% 1/16W
⚠ R793	0119628M	MF 7.5K OHM +-1% 1/8W	R91K	0700014M	CF 10 OHM +-5% 1/16W
⚠ R794	0119609M	MF 1.2K OHM +-1% 1/8W	R91L	0700053M	CF 8.2K OHM +-5% 1/16W
R79H	0113764M	CF 3.9K OHM +-5% 1/2W	R91M	0100133M	CF 680K OHM +-5% 1/8W
R801	0700049M	CF 4.7K OHM +-5% 1/16W	R91N	0700067M	CF 100K OHM +-5% 1/16W
R803	0700048M	CF 3.9K OHM +-5% 1/16W	R91P	0100045M	CF 150OHM +-5% 1/8W
R804	0700038M	CF 680 OHM +-5% 1/16W	R91S	0700055M	CF 12K OHM +-5% 1/16W
R805	0113768M	CF 5.6K OHM +-5% 1/2W	R91T	AT00432S	MF 0.56 OHM +-5% 2W
R806	0113778M	CF 15K OHM +-5% 1/2W	R91U	AT00432S	MF 0.56 OHM +-5% 2W
R807	0188135M	CF 2.2K OHM +-5% 1/2W	R920	AT00572S	MF 100K OHM +-5% 2W
R808	0700025M	CF 68 OHM +-5% 1/16W	⚠ R921	0119690M	MF 0.27 OHM +-5% 1W
R815	0700032M	CF 220 OHM +-5% 1/16W	⚠ R922	0119690M	MF 0.27 OHM +-5% 1W
R820	0100125M	CF 330K OHM +-5% 1/8W	R923	0700054M	CF 10K OHM +-5% 1/16W
R821	0100085M	CF 6.8K OHM +-5% 1/8W	⚠ R924	0700029M	CF 150 OHM +-5% 1/16W
R822	0700065M	CF 68K OHM +-5% 1/16W	R925	0113701M	CF 10 OHM +-5% 1/2W
R823	0100123M	CF 270K OHM +-5% 1/8W	R926	0187084M	CF 6.2K OHM +-5% 1/16W
R825	0700054M	CF 10K OHM +-5% 1/16W	R927	0187078M	CF 3.6K OHM +-5% 1/16W
R826	0700054M	CF 10K OHM +-5% 1/16W	R929	0700053M	CF 8.2K OHM +-5% 1/16W
R827	0700054M	CF 10K OHM +-5% 1/16W	R92A	0700018M	CF 22 OHM +-5% 1/16W
R828	0700061M	CF 33K OHM +-5% 1/16W	R92B	0700032M	CF 220 OHM +-5% 1/16W
R829	0187082M	CF 5.1K OHM +-5% 1/16W	R92C	0700049M	CF 4.7K OHM +-5% 1/16W
R830	0119505M	FR 2.2 OHM +-5% 1/4W	R92E	0700067M	CF 100K OHM +-5% 1/16W
R84B	0188104M	CF 10 OHM +-5% 1/2W	R92H	0700054M	CF 10K OHM +-5% 1/16W
R84G	0188104M	CF 10 OHM +-5% 1/2W	R92K	0700058M	CF 22K OHM +-5% 1/16W
R84R	0188104M	CF 10 OHM +-5% 1/2W	R930	0113795M	CF 68K OHM +-5% 1/2W
R850	0113815M	CF 470K OHM +-5% 1/2W	⚠ R931	0119690M	MF 0.27 OHM +-5% 1W
R85B	0188115M	CF 68 OHM +-5% 1/2W	⚠ R932	0119690M	MF 0.27 OHM +-5% 1W
R85G	0188115M	CF 68 OHM +-5% 1/2W	R933	0700054M	CF 10K OHM +-5% 1/16W
R85R	0188115M	CF 68 OHM +-5% 1/2W	R934	0700029M	CF 150 OHM +-5% 1/16W
R870	0100065M	CF 1K OHM +-5% 1/8W	R935	0113735M	CF 270 OHM +-5% 1/2W
R872	0150305U	VR 10K OHM B	R936	AT00514S	MF 680 OHM +-5% 2W
R874	0100065M	CF 1K OHM +-5% 1/8W	R937	0700056M	CF 15K OHM +-5% 1/16W
R875	0119838M	FR 0.5 OHM +-5% 1/4W	R938	0150282U	VR 500 OHM B
⚠ R901	CJ00141	TH	R939	0700043M	CF 1.5K OHM +-5% 1/16W
R902	CJ00111	TH ZPK68BL9ROB	R93A	0700054M	CF 10K OHM +-5% 1/16W

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SYMBOL NO.	PART NO.	DESCRIPTION	SYMBOL NO.	PART NO.	DESCRIPTION
R93C	0700067M	CF 100K OHM +-5% 1/16W	I361	CP01042U	IC 24LC21A-/P
R93E	0700024M	CF 56 OHM +-5% 1/16W	I381	2916901	IC HD74HC123AP
R93F	0700054M	CF 10K OHM +-5% 1/16W	I501	2003621	IC NJM072D
R93K	0700054M	CF 10K OHM +-5% 1/16W	I502	2388304	IC BA4558N
R93L	0119618M	MG 3K OHM +-1% 1/8W	I502	CP02361	IC NJM4558L
R93M	0700067M	CF 100K OHM +-5% 1/16W	I503	2364631	IC HD14046BP
R970	0100071M	CF 1.8K OHM +-5% 1/8W	I504	2916901	IC HD74HC123AP
⚠ R971	0119651M	MG 68K OHM +-1% 1/8W	I505	CP04172	IC M52723ASP
⚠ R972	0119651M	MG 68K OHM +-1% 1/8W	I506	2020591	IC M5207L05
R973	0150282U	VR 500 OHM B	I507	2388304	IC BA4558N
R974	0119622M	MF 4.3K OHM +-1% 1/8W	I507	CP02361	IC NJM4558L
R975	0700061M	CF 33K OHM +-5% 1/16W	I508	2388304	IC BA4558N
R976	0119621M	MG 3.9K OHM +-1% 1/8W	I508	CP02361	IC NJM4558L
R977	0700067M	CF 100K OHM +-5% 1/16W	I620	2388304	IC BA4558N
R978	0700054M	CF 10K OHM +-5% 1/16W	I620	CP02361	IC NJM4558L
R979	0700045M	CF 2.2K OHM +-5% 1/16W	I630	CP04181	IC LA7841L
R97A	0700047M	CF 3.3K OHM +-5% 1/16W	I631	2003283	IC LA6510
R97B	0700054M	CF 10K OHM +-5% 1/16W	I701	CP04161	IC UPC1883CT(MS)
R97C	0700054M	CF 10K OHM +-5% 1/16W	I703	2388304	IC BA4558N
R97E	0119641M	MG 27K OHM +-1% 1/8W	I703	CP02361	IC NJM4558L
R981	0700039M	CF 820 OHM +-5% 1/16W	I704	2916901	IC HD74HC123AP
R982	0700054M	CF 10K OHM +-5% 1/16W	I706	2910815	IC HD74HC00P
R983	0700041M	CF 1K OHM +-5% 1/16W	I708	CZ00711	IC AN5767K
R984	0700054M	CF 10K OHM +-5% 1/16W	I709	2388304	IC BA4558N
R985	0700056M	CF 15K OHM +-5% 1/16W	I709	CP02361	IC NJM4558L
R988	0700062M	CF 39K OHM +-5% 1/16W	I710	2004561R	IC HA178L09A(TA)
R989	0700061M	CF 33K OHM +-5% 1/16W	I751	2388304	IC BA4558N
R98A	0700059M	CF 27K OHM +-5% 1/16W	I751	CP02361	IC NJM4558L
R98C	0700054M	CF 10K OHM +-5% 1/16W	⚠ I911	CP04331	IC FA5331P
R98E	0700055M	CF 12K OHM +-5% 1/16W	⚠ I921	CP01141	IC FA5304AP
R98H	0700041M	CF 1K OHM +-5% 1/16W	⚠ I922	CJ00022	IC SMX-TLP721F(D4-GR)
R98J	0700054M	CF 10K OHM +-5% 1/16W	⚠ I923	CF10432G	IC ST-PC123FY8
R98M	0113750M	CF 1K OHM +-5% 1/2W	⚠ I931	CP01141	IC FA5304AP
R98N	0700054M	CF 10K OHM +-5% 1/16W	I971	2362606	IC NJM4558D
R98P	0100073M	CF 2.2KV OHM +-5% 1/8W	I981	CP05161F	IC SI-3120F
R997	0700066M	CF 82K OHM +-5% 1/16W	⚠ I982	2000642	IC SI-3240CA
R998	0100049M	CF 220 OHM +-5% 1/8W	I983	CP05221	IC KA7805
R999	0700053M	CF 8.2K OHM +-5% 1/16W	I984	CP05141	IC PQ6RD083
I001	2008721	IC M62358P	Q101	2325721M	TR 2SC1740S
I002	2008721	IC M62358P	Q105	2326871R	TR DTC124ES
I051	2008721	IC M62358P	Q22B	2312821R	TR 2SC3779D/E
I102	CP04151U	IC HD6433256A51P	Q22G	2312821R	TR 2SC3779D/E
I104	CP03991U	IC BR9020	Q22R	2312821R	TR 2SC3779D/E
I105	CP03991U	IC BR9020	Q253	2325721M	TR 2SC1740S
I107	CP05201	IC MAX202CPE	Q303	2326872R	TR DTC114ES SI
I109	CP00511U	IC MM1096BD	Q305	2326872R	TR DTC114ES SI
I201	CP04391U	IC M52737SP	Q371	2326872R	TR DTC114ES SI
I202	CP04401	IC VP553	Q372	2326872R	TR DTC114ES SI
I203	CP01931	IC TDA6103	Q560	2324321M	TR 2SC2610-05
I204	CP02361	IC NJM4558L	Q561	2315341F	TR 2SC4632HIT-CB7
I205	CP02361	IC NJM4558L	Q562	2315631F	TR 2SC4633
I301	CP02831	IC M35045-058SP	Q563	2315631F	TR 2SC4633
I302	2360951	IC HD74LS04P	Q601	CF01571R	TR 2SK940
I304	CP02821U	IC M52347SP	Q602	2326871R	TR DTC124ES
I305	2916901	IC HD74HC123AP	Q701	2325721M	TR 2SC1740S
I306	CP01751	IC HD74HC157P	Q702	2325713M	TR 2SA933S(R)

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SYMBOL NO.	PART NO.	DESCRIPTION	SYMBOL NO.	PART NO.	DESCRIPTION
Q703	2325713M	TR 2SA933S(R)	Q98C	2325721M	TR 2SC1740S
Q704	2325721M	TR 2SC1740S	Q98E	2325713M	TR 2SA933S(R)
Q740	2325721M	TR 2SC1740S	Q999	2325713M	TR 2SA933S(R)
⚠ Q741	CF00921F	TR FS7KM-18A-AT	D049	CH00182R	LED SLZ-381C-06-T1(T)
Q742	2321872M	TR 2SD655E	D100	2337341M	DI 1SS270A
Q743	CF01081R	TR 2SA966-Y(TPE6.C)	D101	2337341M	DI 1SS270A
Q744	2326871R	TR DTC124ES	D102	2337341M	DI 1SS270A
Q745	CF01901F	TR 2SK2182	D103	2337341M	DI 1SS270A
Q748	2325713M	TR 2SA933S(R)	D104	2337341M	DI 1SS270A
Q749	2325726M	TR 2SC1740S Q	D105	2337341M	DI 1SS270A
Q750	2328102F	TR FN521	D1FZ	2339851M	ZD HZS7A1
Q751	2324321M	TR 2SC2610-05	D21B	2337341M	DI 1SS270A
Q754	2324321M	TR 2SC2610-05	D21G	2337341M	DI 1SS270A
Q760	CF00811U	TR FS5KM-5	D21R	2337341M	DI 1SS270A
Q761	2312173F	TR 2SD2375(Q)	D22B	2337341M	DI 1SS270A
Q762	2325721M	TR 2SC1740S	D22G	2337341M	DI 1SS270A
Q763	2325721M	TR 2SC1740S	D22R	2337341M	DI 1SS270A
Q764	CF01551F	TR 2SC5411	D241	CH00151M	DI DSM1SD2
Q771	2325721M	TR 2SC1740S	D242	2337341M	DI 1SS270A
Q776	2326871R	TR DTC124ES	D243	2337341M	DI 1SS270A
Q777	CF00931U	TR 2SK2382(S4HITTO)	D244	2337341M	DI 1SS270A
Q778	2326871R	TR DTC124ES	D24B	2331912M	DI 1SS82 SI
Q779	CF00931U	TR 2SK2382(S4HITTO)	D24G	2331912M	DI 1SS82 SI
Q780	2326871R	TR DTC124ES	D24R	2331912M	DI 1SS82 SI
Q781	CF00931U	TR 2SK2382(S4HITTO)	D251	2337341M	DI 1SS270A
Q782	2326871R	TR DTC124ES	D252	2337341M	DI 1SS270A
Q783	CF00931U	TR 2SK2382(S4HITTO)	D253	2337341M	DI 1SS270A
Q784	2326871R	TR DTC124ES	D256	2337341M	DI 1SS270A
Q785	CF00931U	TR 2SK2382(S4HITTO)	D25B	2337341M	DI 1SS270A
Q800	2328102F	TR FN521	D25G	2337341M	DI 1SS270A
Q801	2324321M	TR 2SC2610-05	D25R	2337341M	DI 1SS270A
Q804	2324321M	TR 2SC2610-05	D271	2337341M	DI 1SS270A
Q820	2327881M	TR 2SA1207S	D273	2337341M	DI 1SS270A
Q821	2327881M	TR 2SA1207S	D2BB	2337341M	DI 1SS270A
Q822	2327881M	TR 2SA1207S	D2BG	2337341M	DI 1SS270A
Q823	2326871R	TR DTC124ES	D2BR	2337341M	DI 1SS270A
Q824	2326871R	TR DTC124ES	D33Z	2331805M	DI HZ-6B2
Q870	CF01911F	TR 2SD2012	D34Z	2331805M	DI HZ-6B2
Q871	CF01921F	TR 2SB1375	D35Z	2331805M	DI HZ-6B2
⚠ Q910	CF01581F	TR 2SK2223	D36Z	2331805M	DI HZ-6B2
Q911	2325713M	TR 2SA933S(R)	D372	2337341M	DI 1SS270A
⚠ Q920	CF01591F	TR 2SK2717	D51Z	2339952M	ZD HZS27-2
Q921	2325713M	TR 2SA933S(R)	D522	2337341M	DI 1SS270A
Q922	2325721M	TR 2SC1740S	D523	2337341M	DI 1SS270A
⚠ Q930	CF01902F	TR 2SK2666	D562	2337341M	DI 1SS270A
Q932	2325721M	TR 2SC1740S	D563	2337341M	DI 1SS270A
Q971	2325721M	TR 2SC1740S	D578	2338531M	DI EG01C
⚠ Q972	2325721M	TR 2SC1740S	D579	2338531M	DI EG01C
Q973	2326871R	TR DTC124ES	D57Z	2339847M	ZD HZS6C1
Q981	2326871R	TR DTC124ES	D618	2337341M	DI 1SS270A
Q982	2325721M	TR 2SC1740S	D630	CH00151M	DI DSM1SD2
Q983	2325713M	TR 2SA933S(R)	D64Z	2339847M	ZD HZS6C1
Q986	2325713M	TR 2SA933S(R)	D701	2337341M	DI 1SS270A
Q987	2326871R	TR DTC124ES	D702	CH00151M	DI DSM1SD2
Q988	2321872M	TR DTC114ES SI	D703	2337341M	DI 1SS270A
Q989	2312174F	TR 2SD2375-P(LT)	D71Z	2339867M	ZD HZS-9C1

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SYMBOL NO.	PART NO.	DESCRIPTION
D745	2337341M	DI 1SS270A
D746	2339952M	ZD HZS27-2
⚠ D75Z	2339837M	ZD HZS-5C1
D761	2348432M	DI RMPG06G
D770	CH01071M	DI 2FWJ42
D773	2338561M	DI ERA32-02
D775	2337341M	DI 1SS270A
D77Z	2339192M	ZD HZS20-2L
D790	2338561M	DI ERA32-02
⚠ D79Z	2339133M	ZD HZS-12A3L
⚠ D7AZ	2339837M	ZD HZS-5C1
D803	2337341M	DI 1SS270A
D821	2337341M	DI 1SS270A
D822	2337341M	DI 1SS270A
D823	CH01541M	DI 1GU42 (400V)
D824	2337341M	DI 1SS270A
D840	CH00031M	DI AU02V1
D870	CH01101M	DI SM-1XH02TP
D871	CH01101M	DI SM-1XH02TP
D87Z	2339811M	ZD HZS-3A1
D901	2349721	DI D5SBA60
D910	2349911	DI D3L60
D911	2334832M	DI EK04V1
D912	2337341M	DI 1SS270A
D913	2337341M	DI 1SS270A
⚠ D920	2338531M	DI EG01C
D92Z	2339952M	ZD HZS27-2
D930	2338531M	DI EG01C
D931	2338561M	DI ERA32-02
D932	2343051M	DI 1SS145
D933	2349571M	DI SM-1XP2TP
D935	2337341M	DI 1SS270A
D93Z	2339952M	ZD HZS27-2
D94Z	2339952M	ZD HZS27-2
D95Z	2339837M	ZD HZS-5C1
⚠ D971	CH01081	DI FMC-G28S
D972	2337341M	DI 1SS270A
D97Z	2339112M	ZD HZS-11B2L
D981	2338531M	DI EG01C
D982	CH01091M	DI EL1
D983	2348901	DI D3L20U
D984	2349571M	DI SM-1XP2TP
D985	2338561M	DI ERA32-02
D986	2337341M	DI 1SS270A
D988	2338561M	DI ERA32-02
D998	2337341M	DI 1SS270A
D99Z	2339837M	ZD HZS-5C1
⚠ T750	BW00721	FLYBACK TRANSFORMER HFL1327YD
⚠ T770	BZ01961	DRIVE TRANSFORMER
⚠ T780	BZ01971	CHOKE TRANSFORMER
⚠ T920	BT00761	TRANSFORMER
⚠ T930	BT00772	TRANSFORMER
F605	AZ00103M	FUSE 1.5A
⚠ F901	2722446	FUSE 4A
L02F	2123469M	FERRITE BEADS CORE LEAD 2.3
L03F	2123469M	FERRITE BEADS CORE LEAD 2.3
L050	2122956M	LA AXIAL COIL 100 MICRO H +-10%
L051	2123469M	FERRITE BEADS CORE READ 2.3
L241	2123781R	FILTER COIL
L251	2123468M	FERRITE BEADS CORE LEAD 0.8
L252	2123468M	FERRITE BEADS CORE LEAD 0.8
L255	2123468M	FERRITE BEADS CORE LEAD 0.8
L303	2125757R	COIL 10MH
L40F	2123468M	FERRITE BEADS CORE LEAD 0.8
L41F	2123468M	FERRITE BEADS CORE LEAD 0.8
L540	2122956M	LA AXIAL COIL 100 MICRO H +-10%
L605	2122242M	LA AXIAL COIL 15 MICRO H +-10%
L63F	2123469M	FERRITE BEADS CORE LEAD 2.3
L710	2122239F	LA AXIAL COIL 10 MICRO H +-10%
L72A	2125793N	COIL 2.2MH
L72F	2123469M	FERRITE BEADS CORE LEAD 2.3
⚠ L741	BZ01951	COIL 390MH
L74F	2123469M	FERRITE BEADS CORE LEAD 2.3
L761	2122253M	LA AXIAL COIL 100 MICRO H +-10%
L770	BZ01693	LINEARITY 2MH
L771	BZ01694	LINEARITY 1.2MH
L791	2122956M	LA AXIAL COIL 100 MICRO H +-10%
L851	2123468M	FERRITE BEADS CORE LEAD 0.8
L85F	2123468M	FERRITE BEADS CORE LEAD 0.8
L875	2125816N	COIL 270MH
L900	BZ01991	DEGAUSSING COIL
⚠ L901	BZ02361	COIL
⚠ L902	BZ02361	COIL
⚠ L910	BV00761	CHOKECOIL 700MH
L91F	2123469M	FERRITE BEADS CORE LEAD 2.3
L92F	2123469M	FERRITE BEADS CORE LEAD 2.3
L931	2122944M	LA AXIAL COIL 12 MICRO H +-10%
L94F	2123469M	FERRITE BEADS CORE LEAD 2.3
L95F	2123469M	FERRITE BEADS CORE LEAD 2.3
L96F	2123469M	FERRITE BEADS CORE LEAD 2.3
L97A	2125797N	COIL 10MH
L97F	2123469M	FERRITE BEADS CORE LEAD 2.3
L981	2122253M	LA AXIAL COIL 100 MICRO H +-10%
L98F	2123469M	FERRITE BEADS CORE LEAD 2.3
L99F	2123469M	FERRITE BEADS CORE LEAD 2.3
S001	2632851	TACTO SWITCH
S002	2632851	TACTO SWITCH
S003	2632851	TACTO SWITCH
S01	EW03731	CABLE SIGNAL
S77R	FJ00082	RELAY
⚠ S901	2634732	POWER SWITCH
⚠ S91R	FJ00082	RELAY
S98R	FJ00082	RELAY
	3330941	EARTH SPRING
	3332452	90KNOB SPRING
	3705233	ANODE CLAMPER
	3782716	PCB SUPPORT
	3782719	PCB SUPPORT
	4319361	M4X12 CE KNURL TAPPING SCREW
	4519512	TAPPING SCREW 4X16 MM
	4519521	5X20 WASHER BASED SCREW
	4522881	3X8 CE KNURL SCREW

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SYMBOL NO.	PART NO.	DESCRIPTION	SYMBOL NO.	PART NO.	DESCRIPTION
	4522881	3X8 CE KNURL SCREW			
	4528451	M4 SCREW WITH WASHER			
	4616826	RUBBER FOOT			
	8711608	4X8 PAN HEAD SCREW			
	8815126	LOCKING WASHER 4			
	NJ02242	HOLDER			
	NJ02243	HOLDER			
	NJ02271	HOLDER			
	QD03985	REAE COVER			
	QD05181	BEZEL S-ASS'Y			
E091	ED01273	15PIN PLUG			
E092	ED01273	15PIN PLUG			
E20	EF06041	8PIN CONNECTOR			
E251	ED01293	15PIN CONNECTOR			
E252	ED01293	15PIN CONNECTOR			
E853	EY00631	JACK			
⚠ E901	2676371	AC INLET			
E90F	2721351	FUSE HOLDER			
EP	EV00482	CORD POWER			
G560	CJ00071R	SPARK GAP			
G851	2340741M	SPARK GAP			
G852	2340741M	SPARK GAP			
G853	2340741M	SPARK GAP			
G854	2340741M	SPARK GAP			
K21B	0195250R	CHIP 0 OHM 1/16W			
K21G	0195250R	CHIP 0 OHM 1/16W			
K21R	0195250R	CHIP 0 OHM 1/16W			
K342	0195250R	CHIP 0 OHM 1/16W			
K344	0195250R	CHIP 0 OHM 1/16W			
K347	0195250R	CHIP 0 OHM 1/16W			
K348	0195250R	CHIP 0 OHM 1/16W			
K351	0195250R	CHIP 0 OHM 1/16W			
K362	0195250R	CHIP 0 OHM 1/16W			
N562	4519506	3*8 B TIGHT TAPPING SCREW			
N563	4519506	3*8 B TIGHT TAPPING SCREW			
N630	4520889	SCREW M3*10			
N741	4520889	SCREW M3*10			
N764	4520889	SCREW M3*10			
N771	4520889	SCREW M3*10			
N800	4520889	SCREW M3*10			
N870	4520889	SCREW M3*10			
N910	4520889	SCREW M3*10			
N920	4520889	SCREW M3*10			
N930	4520889	SCREW M3*10			
N971	4520889	SCREW M3*10			
P201	EY00852	15P D-SUB MINI CONNECTOR			
⚠ V1	DE01392	C.P T WITH D Y M46LLQ683X(U)			
X101	BP00401	CRYSTAL OS*200*13(19.6608)HC			

HITACHI

CM751 YK No.0043E-1 Image & Information Media Systems Division
SUPPLEMENT Image & Media Systems Operation

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